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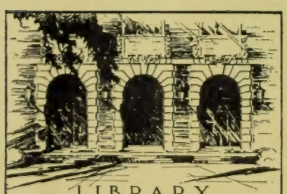

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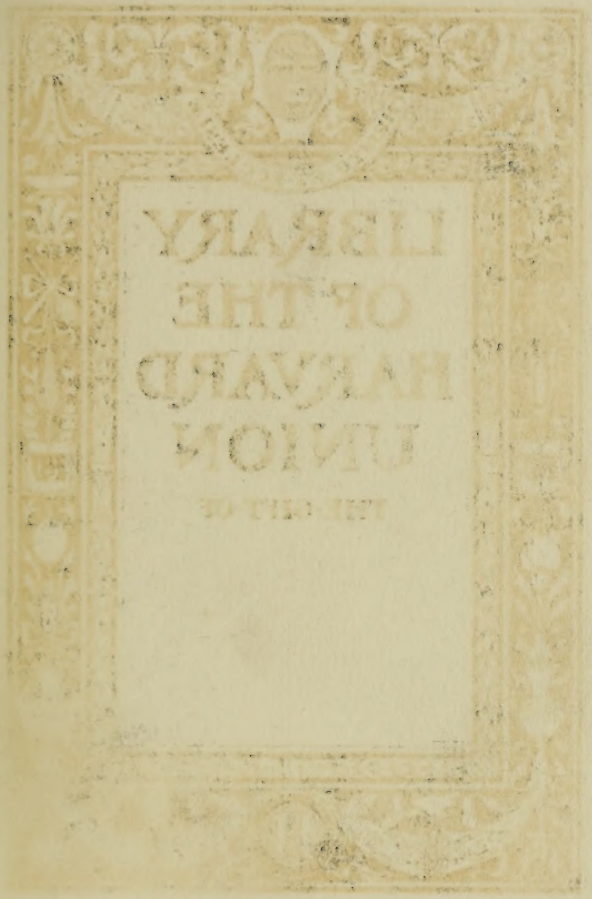

REPORTS

OF THE

VISITING COMMITTEES OF THE BOARD OF OVERSEERS

OF

HARVARD COLLEGE

FROM

JANUARY 8, 1902, TO JULY 30, 1909
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CX.

REPORT OF THE COMMITTEE TO VISIT THE OBSERVATORY.

To the Board of Overseers of Harvard College: —

The Committee appointed by the Board of Overseers to visit the Observatory has held the usual meetings the past year, the most interesting and important of which was held at the Observatory in the spring.

It is believed to be important at this time to call attention to the most important needs of the Observatory, which are stated in the Fifty-fifth Annual Report of the Director.

One expenditure should be made at once, since otherwise its objects will not be accomplished. During the last half century, forty volumes of Annals have been published, the greater portion of them during the last twenty-five years. The material for twenty-eight additional volumes is now in a more or less advanced stage of preparation for publication. Much of this material is liable to destruction by fire from the fact that the main building of the Observatory is of wood. A large portion of the preparation of these volumes could be done very economically at the present time by the employment of inexpensive computers and copyists. Many of the higher grade officers of the Observatory are obliged to do work themselves which could be done much more rapidly and cheaply if each were provided with three or four assistants to work under his direction. Such work could now be supervised advantageously by those who have made the observations and are familiar with the necessary reductions. A few years hence, it might be necessary to employ other persons to supervise the work who would have to learn for themselves how it should be done. The experience of other observatories has shown that much valuable work has been entirely lost by neglect to publish it during the lifetime or activity of those who have made the observations. It is estimated that the sum of fifty thousand ($50,000) dollars, if expended during the next ten years, would secure the publication of one-half of this work and the reduction of the remainder, so that there would be little danger of its ultimate

loss. As the sum named above represents but little more than the income of the Observatory for one year, the economy of such an expenditure is obvious.

Another expenditure is becoming every year more urgent. The growth of the buildings of the Observatory has been by no means proportionate to the amount of material which has accumulated. The only building of modern construction upon the grounds is that erected in 1891, for the preservation of the photographic plates. It is of brick, of mill construction, and cost about fifteen thousand ($15,000) dollars, which was raised by a subscription secured by the Visiting Committee of the Observatory. Its cost was kept within the original estimate, and it has answered its purpose admirably for the last nine years. The growth of the collection of photographs, and the use that is now being made of them on account of the more general appreciation of their value, renders more room imperative. It is estimated that plain buildings of modern construction would provide for the present needs of the Observatory at a cost of a hundred thousand ($100,000) dollars. The sum of fifty thousand dollars, however, would permit a building to be erected which would supply our immediate needs for the care of the photographs and for the library, retaining the present wooden building for much of the office work. Such a building, if given by an individual, should bear his name, as in the case of other College buildings. If preferred, it would form an excellent memorial by which a name would be permanently associated with a science universally regarded as one of the most far reaching and ennobling. It is believed that if these two sums of $50,000 were subscribed, the scientific results would satisfy the donors.

For the Committee,

EDWIN P. SEAVER,
Chairman.

January 8, 1902.

CXI.

REPORT OF THE COMMITTEE ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY.

To the Board of Overseers of Harvard College: —

Your Committee have met several times, as occasion required, at 50 State Street, to discuss their duties, to divide these up among the members to the best advantage, and to compare notes on their individual observations and experience. Some of the courses in each of the subjects assigned to this Committee have been attended by selected members of the Committee, interviews were held with professors and instructors, and the examination papers have been looked over.

Three general questions have incidentally attracted the attention of your Committee in the course of their investigations, questions which doubtless apply to many other departments and courses as well as to those with which we are concerned: I. The want of a Publication Fund, by means of which aid may be extended to certain poor but meritorious and successful candidates for the doctorate for the publication of deserving theses, of which some, calculated to reflect credit both upon the candidates themselves and upon the University, now get no further than one typewritten copy stored away in the College Library. II. A tendency to overwork the more competent, eager, and ambitious instructors. Regrettable as a diminution of the courses would be, it seems almost a lesser evil than the inevitable diminution in the enthusiasm and elasticity of a naturally keen instructor under such conditions. The really desirable alternative would be an increase in the number of instructors, in the number of courses, and in some cases in salaries. Some of that freshness which is desirable for the College courses is now spent on extra courses at Radcliffe. These remarks apply especially to Spanish and Italian. III. The system of correctors of written exercises. The system itself seems to be, if not a good, at least a necessary one. It lightens somewhat the labors of the sufficiently burdened instructor. But the application of the system ought by some means to be improved. The corrector should himself be an educated man, and as such in touch and in sympathy with the instructor.

SPANISH.

The courses in Spanish have been attended by some of the members of the Committee, and some of the instructors have been interviewed. The instruction generally was found to be very satisfactory. The total number of persons taking Spanish this year is about 180. In the elementary course, Spanish 1, there are 135 students, distributed among five different sections. In Spanish 5, literature of the nineteenth century, there are 34 students. Spanish 2, the classical age, including Don Quixote, given by Professor Marcou, is taken by about twelve students. Spanish 3, a course on the early Spanish monuments and the history of the language and the literature down to 1500, is given only every other year. Last year it was given by Dr. Ford, and was attended by ten graduate students.

It is judged that those who take Spanish may be divided into three divisions: those who take it as part of their special studies in general philology and literature; those who take it simply as one of a certain number of required courses; and those who take it as having a bearing on their future careers. This last division, we understand, contributes about ten per cent. of the whole number. It seems to us that in its practical uses Spanish is likely to prove in the not distant future one of the most useful, if not the most useful, of the modern languages for a considerable number of the young men of this country; this point should be kept well in mind by Harvard College, and with this end in view your Committee again recommend a course in commercial Spanish. It is to be hoped that our previous remarks as to correctors might in some way be made applicable to the written exercises in Spanish. Professor Marcou and Dr. Ford are at present collaborating upon a dictionary of the Spanish language, intended to replace for students' use the familiar Velasquez.

ITALIAN.

The three Italian courses given this year are attended by 81 students. Dr. Ford, assisted by Mr. Capotosto, an Italian-American in the Senior Class, has charge of the elementary course, in which grammar, composition, and easy reading are being successfully taught. Professor Grandgent has Italian 10, which embraces a careful study of Dante's *New Life* and *Divine Comedy*, and of Italian 3, primarily for graduates, which covers the literary and philological works of the thirteenth and fourteenth centuries, exclu-

sive of Dante. A course on the literature of the fifteenth and sixteenth centuries, by Mr. Fletcher, is not given this year.

The sub-committee heartily commend Professor Grandgent's methods, which are lucid, scholarly, and comprehensive, and they commend the efforts of Dr. Ford and Mr. Capotosto to bring their classes to the point where they can read ordinary Italian easily at the end of the year. But it is evident that the general scheme of instruction in Italian offered at Harvard still lacks structural unity. An earnest student cannot get an intelligent survey of Italian literature, or study the growth of the Italian language. For the scheme of instruction leaves a gap from Tasso to Manzoni, a period of about 230 years, and it provides only elementary instruction, which of course cannot be critical, or literary, or philological, for the authors of the nineteenth century. It is as if, in an Italian university, the curriculum in English should comprise one elementary course, one on Chaucer's predecessors, one on Shakspere, and one on Milton and his contemporaries, leaving the literature of the past 250 years a blank.

We earnestly recommend, therefore, that steps be taken to introduce at once a course covering the period from Tasso's *Gerusalemme Liberata* to Manzoni's *Promessi Sposi*, and that another advanced course on nineteenth century authors be provided as soon as possible. The University cannot expect that Italian, or any other subject, shall be taken seriously and shall prosper, unless rational instruction in it be offered. That there will be plenty of diligent students in Italian as soon as means are given to pursue that language and literature properly, we have no doubt; the attendance at Professor Grandgent's course in the early literature, a difficult but interesting course, shows that the students may be relied upon to appreciate a good thing. Believing that Harvard should present the best Italian curriculum of any American university, we regret to say that this year Columbia offers five courses in Italian to Harvard's three and Yale's three.

We should state that this suggestion, repeated now in several of these reports, has the unqualified approval of the teachers of Italian. It is evident that, to carry it out, at least one additional instructor is needed, for the department is undermanned; but this addition should surely be made, in order to put Italian on a decent footing and to bring it almost up to the level of the curriculum at Columbia.

The sub-committee cannot conclude without referring briefly to the final retirement in June, 1901, of Professor Charles Eliot Norton. During more than twenty years his course in Dante was one of the

glories, not only of Harvard, but of American university education. No one who had the privilege of studying under him failed to recognize that such instruction as his was a model of what the highest interpretative instruction should be. Harvard should not forget that she has had in succession, as teachers of Dante, Ticknor, Longfellow, Lowell, and Norton; and she should see to it that the standard of the courses she offers in Italian should be worthy of such men.

ROMANCE PHILOLOGY.

The sub-committee appointed to report upon the subject of Romance Philology and Phonetics have visited the class-rooms of Professors Sheldon, Grandgent, von Jagemann, Marcou, and Dr. Ford, under whom all, or nearly all, of this work lies. The courses given by Professor Sheldon, both elementary and advanced, are distinctly philological in character, dealing mainly with early Old French language and literature. Some knowledge of phonetics is quite requisite for the most intelligent pursuit of these subjects. The men in these courses are mature students of certainly more than average ability, whose questions show a keen interest and ready comprehension of the subject. The questions and problems that arise are handled by the professor in a masterly way.

The course in phonetics, comprising a general introduction to linguistics, is divided between Professors Grandgent and von Jagemann, each giving one hour a week instruction. Professor Grandgent deals with the purely fundamental principles involved in sounds themselves. About a dozen students pursue the course. Professor von Jagemann deals with the rather more linguistic phase of the subject. The treatment of the subject, thus divided phonetically and linguistically, and ably handled by the two professors, offers an admirable introduction to the further scientific study of language in general. The work of Professor Marcou and Dr. Ford is, to a certain extent, philological in character, although not laid down professedly as such. All of these teachers were consulted in regard to the feasibility of carrying on linguistic research along the lines for a number of years in vogue in Paris, in the laboratory of the Abbé Rousselot, at the Collége de France, and much encouraged by the leading Romance scholar, Gaston Paris. This idea has already been received with favor at Yale, and Professor Scripture's published experiments have done a good deal to attract the attention of teachers and scholars towards the scientific investigation of linguistic phenomena. In regard to this matter Professor Lang of Yale, a

member of our Committee, writes under date of February 28th, 1902, as follows: "There is, to my mind, no doubt whatever as to the great value, both for the importance of the subject itself in the study of Romance speech, and for the mental training it affords, of the study of Experimental Phonetics. It is as indispensable to the linguist, — I mean, of course, the student of linguistics, — as biology is to a first-class naturalist or to a physician. I have no doubt that Harvard will soon develop the study of this subject, especially as it has had for a number of years two excellent students of phonetics, — the best in this country thus far, — Professors Grandgent and Sheldon, whose advice will be invaluable in the organization of a department of Experimental Phonetics in Harvard." The professors above named, Professors Sheldon, Grandgent, von Jagemann, Marcou, and Dr. Ford, all heartily approved the idea of being able to make experiments along the lines above laid down, the only obstacle in the way at present being the lack of the necessary instruments with which to start a small laboratory. Investigation shows that five hundred dollars will meet this need, and place the department in possession of some of the best instruments now used in the science of experimental phonetics. The question of finding a small room in which the instruments could be kept and used did not appear to the heads of the department a serious one. Therefore, under the circumstances, the committee to whom this matter has been referred, believe it fitting to recommend that an effort be made, in such a way as may best meet the exigencies of the case, to secure the funds necessary to carry on the most advanced scientific linguistic investigation.

GEORGE B. SHATTUCK,
J. RANDOLPH COOLIDGE, Jr.,
WILLIAM R. THAYER,
JAMES GEDDES, Jr.

March 27, 1902.

CXII.

REPORT OF THE COMMITTEE TO VISIT THE MEDICAL AND DENTAL SCHOOLS.

To the Board of Overseers of Harvard College: —

THE MEDICAL SCHOOL.

For the Medical School the present is eminently a transition period. In making a report this year your Committee keep this fact clearly in mind. The Board of Overseers is already aware that by the wise foresight and action two years ago of interested Boston friends the Medical School is now in control of twenty-six acres of desirable land, bounded by Longwood Avenue, Huntington Avenue, and Francis Street, where it is hoped that not only its own buildings and that of the Dental School, but also those of several hospitals, may be appropriately and conveniently grouped. The advantage both to the hospitals and to the Medical School from such a juxtaposition can hardly be overestimated. It is also known to the Board that very large sums of money have been raised for the School through the fruitful activity of two members of its Faculty, Drs. J. Collins Warren and H. P. Bowditch, — an activity heartily aided and encouraged by other friends of the School both in Boston and in New York. Within the last twelve months $2,822,225 of new money has been pledged to the School, which, added to its previous endowments of $1,098,489, the value of its present land and buildings, and further sums to be provided by the Corporation from unrestricted funds in hand, will place the School in possession of nearly $5,000,000 with which to begin its new career. Of the new money, $1,000,000 was promised by Mr. J. P. Morgan, $1,000,000 by Mr. J. D. Rockefeller, $250,000 by Mrs. C. P. Huntington, $100,000 by Mr. James Stillman, all of New York, and the balance in smaller sums by donors in Boston and New York. An instructive feature of this gratifying result is the fact that one of the most active and useful solicitors in its furtherance in New York was a graduate of Yale College and of the Harvard Medical School, Dr. William B. Coley, a noteworthy indication that a degree from one institution of learning does not necessarily involve hostility to a sister institution of learning.

Before leaving this agreeable subject, your Committee think it not amiss to repeat the statement made by President Eliot in the last annual report of the University: "Thirty years ago the Medical School had the smallest endowment among the professional departments; in 1869–70, the invested funds applicable to the School amounted to only $45,136; on the 31st day of July, 1901, the funds applicable to the School amounted to $1,098,489, and this sum did not include any of the recent contributions." Notwithstanding this apparent prosperity, it must not be overlooked that the teaching of medicine, as it should be taught to-day by the Harvard Medical School, is a very expensive process, involving large outlays in salaries of numerous instructors, in buildings, in laboratories, in lecture-rooms, and in apparatus. On the other hand, your Committee firmly believe there is no department of the University from which more gratifying and beneficent results may be expected.

The responsibility for securing such results in proportion to the means provided has passed now from the friends and benefactors of the School to rest with the Governing Boards of the University and the Medical Faculty. It is a very serious responsibility, and it will fall to the lot of our successors at a later date to discuss its discharge.

Your Committee have met a number of times both at 50 State Street and at the Medical School, the members have attended courses at the Medical School and hospitals, and have conferred with professors and instructors in the various departments. Some testimony has been collected with regard to the massing of the basic studies in the first two years. It is evidently still too soon to form positive conclusions as to the results to be expected from the system. Most of the professors, and especially those in charge of the basic studies immediately concerned, speak very favorably of the working of the system. Dr. Dwight, however, the Parkman Professor of Anatomy, looks upon the system, on the whole, with "distrust." He writes as follows: —

"In reply to your question as to how the new system works in anatomy, I cannot as yet make a perfectly comprehensive answer. It has not yet been long enough in operation. I look upon it on the whole with distrust. During the first term of the first year the pace is very fast. I am surprised at the amount of instruction that the best men in the class contrive to absorb. I do not see, however, how it should be possible for them to digest it so as to assimilate it well. The course in one respect is a very cruel one. If, through even a short sickness, a man is put out of attendance, it is almost impossible for him to make up the loss, when those constantly at

work have little time to spare. Although I have always believed that teaching should be directed towards the first rather than the second half of the class, yet I cannot but feel that this system is hard on the 'slow' man. At the end of the first term the class this year was very tired.

"A very great defect in the system is that after the first term of the first year there is a complete pause in anatomical teaching for a whole year. It is resumed at the beginning of the second term of the second year, continuing during February and March. I have eight hours weekly during that time, part of which is devoted to study of specimens and to demonstrations to sections. I give formal lectures about four times a week. I believe that after this year this course can be very much improved, owing to the comparatively small size of the class. The present second year has nearly 180 students, which is a large number to teach in this way. I think it would be a great improvement to have anatomy continue through the first year, say for half a day, and during that time to have the body dissected twice. The second-year anatomy could then be omitted and the fourth-year anatomy increased, so that those who felt the need of more anatomy should be able to get it. They should have a free choice of the kind of anatomy that they want, whether simple dissections, or regional, or that of some particular system, or scientific anatomy."

The teachers in charge of the clinical instruction of the third year report, generally speaking, that they cannot as yet form any accurate opinion of the working of the system. The whole question is somewhat complicated by the want of homogeneity in the present classes, a condition which will be in great measure eliminated when the present requirement of an academic degree or its equivalent at entrance shall have had time to affect all the classes.

The sub-committee appointed to inspect the present Medical School building report that in their opinion no radical changes, however desirable, are advisable in the present building, since new buildings will be provided within a reasonable period. More light and a better ventilation, which are much needed in certain rooms, can be attained by simple changes at comparatively small expense. The ventilation of the dissecting-room has been much improved in recent years.

THE DENTAL SCHOOL.

When the Dental School was projected a third of a century ago, the existing dental schools were all specially chartered institutions, and independent of University government. All were particularly deficient in the teaching of the medical fundamentals, such as anatomy and physiology. It was the aim of those men who were

active from the start to make the new school a leader in all respects in its department. It is believed that this aim has never been lost sight of, and that the Harvard Dental School has always had the distinction, and has to-day, of being a leader as a teaching school, and as being especially preëminent among the nearly three score schools of the country, in its insistence, at great pecuniary loss, on faithful and honest compliance with its high demands from all who have received its degree.

The first year's instruction of medical and dental students has always been given in the medical building by the same instructors with more or less discrimination in rights, privileges, and requirements, and in examination tests, until the past year, when all distinctions were abolished. It may be a question whether this course is wise and prudent, but as the new order of equality has been in operation but one year, and has effected an almost entire abolition of friction and is proving successful, it is recommended that no change be made at present.

GEORGE B. SHATTUCK,
DAVID W. CHEEVER,
CHARLES F. FOLSOM,
FRANCIS L. HIGGINSON,
HENRY F. SEARS,
MORRILL WYMAN,
WILLIAM STURGIS BIGELOW,
HENRY H. SPRAGUE,
LUTHER D. SHEPARD.

March 27, 1902.

CXIII.

REPORT OF THE COMMITTEE TO VISIT THE JEFFERSON PHYSICAL LABORATORY AND DEPARTMENT OF PHYSICS.

To the Board of Overseers of Harvard College: —

The undersigned members of the Committee appointed to visit the Jefferson Physical Laboratory and Department of Physics, having attended a duly notified meeting at the laboratory building on Tuesday, May 6, 1902, have the honor to report as follows: —

Five hundred students are attending the various courses in Physics, an increase of thirty over the corresponding number last year; and four graduate students have been engaged in research.

There is pressing demand for the services of a skilful glass-blower in the laboratory machine-shop. The new field of electro-chemistry, which is essentially physical, requires the constant services of such an artisan; and the Director's work in his newly opened field of spectrum analysis has been much hampered by the delays incident to the necessity of depending upon commercial glass-blowers for needful apparatus.

As the annual report of the Director to the President will contain a detailed statement of the investigations carried on and the papers published by the Department of Physics during the year, the Committee, in connection therewith, confine themselves to a remark that, in their opinion, these investigations and papers are most creditable evidences of the zeal, ingenuity, and scientific ability of the Laboratory Staff.

The laboratory building and its equipment are in perfect order; and are well adapted for a very great extension of the scientific work for which they were designed.

The most important event in the history of the Jefferson Physical Laboratory, since its foundation, is the receipt, at the end of the last academic year, of a fund of Sixty Thousand Dollars from the Hon. T. Jefferson Coolidge. One of the conditions attached to this munificent gift is the following: —

"The income of this fund shall be used primarily for laboratory expenses of original investigations by members of the laboratory staff; but the Director, at his discretion, may award therefrom an

honorarium, of not more than $500 per annum, for the private use of any person who (although receiving no salary from the University) may wish to carry on original investigations under his direction at the Jefferson Physical Laboratory."

In addition to the impetus and support which the income of this fund must give to investigations by the Laboratory Staff, the Committee believe that the "Coolidge Honorariums," which may be awarded therefrom, will make the laboratory of international interest; and will give that beneficent pecuniary assistance which in many cases is essential to the conversion of scientific aspiration into fruitful scientific work.

It is noteworthy that the gift of Mr. Coolidge antedates the recent gift of Mr. Carnegie for similar purposes, and that it comes to a centre of physical research where the mechanical equipment is better than that at any other university in this country or abroad; and where, moreover, there are a number of young men who are zealous disciples of the professional staff.

The Jefferson Physical Laboratory is the only endowed laboratory in America, and the Committee believe that it will soon attain and forever hold a leading intellectual position in the scientific world.

FRANCIS BLAKE,
ELIHU THOMSON,
A. LAWRENCE ROTCH,
T. JEFFERSON COOLIDGE.

May 7, 1902.

CXIV.

REPORT OF THE COMMITTEE TO VISIT THE ARNOLD ARBORETUM.

To the Board of Overseers of Harvard College: —

The Committee appointed to visit the Arboretum begs to submit its report.

The Committee as a whole, and through some of its members individually, has carefully inspected the Arboretum during the year and conferred repeatedly with the Director. It finds much to praise in the Arboretum, and realizing that it has accomplished much, it deplores that it has not done more. Under the terms of the agreement between the University and the Trustees under the will of the late James Arnold, it was provided that the trees and shrubs which can be made to grow in this climate should be assembled in the Arboretum. This has been done. The Arboretum has been active in hunting out in gardens and nurseries in all the temperate regions of the world, some almost inaccessible, trees and shrubs for its collections, and, having found them, it has propagated and distributed them with a lavish hand among all similar collections in the United States and Europe. Its influence in this way on the parks and gardens of the world has been considerable, and in this country in particular it has developed a wide-spread interest in the cultivation of trees and shrubs. It has stimulated research in dendrology and the study of forests, and fortunate in a Director of national reputation and with the ability to spend liberally of his private means for carrying on the purposes of the Arboretum, it has been able to secure in a comparatively short time the most complete dendrological library in the world, and large and valuable scientific collections. It has accomplished a large amount of scientific work, principally in the line of increasing the knowledge of the trees and forests of North America, in which it has been aided at different times by the use of the Director by the general government in investigations of the national forests.

The Arboretum now has a well recognized and secure scientific position, with friends and correspondents in every country where trees are valued. Your Committee believes that it is one of the most

valuable departments of the University, and that it holds a prominent and permanent position among the scientific and educational institutions which give fame to this city. Realizing this and all that it has accomplished, your Committee regrets that the reputation of the Arboretum and its scientific equipment cannot be made more generally useful. It has still the labor of several generations before the trees of all the world are as well known as the trees of the United States. It has work to do along lines with which it is already familiar in China, in Mexico, in Cuba, and the Philippines. It would redound to the credit of the University if the Arboretum could take the initiative in a systematic study of the forest wealth of these countries, and of Africa and South America.

The Arboretum cannot perform the best service to this community of which it is capable until it is equipped to study on a comprehensive scale the diseases of trees and their remedies, and without a well-equipped station of economic entomology it is evident that it is not doing all that the country has a right to expect of it. Your Committee believes that the value of the Arboretum to the specialists, who visit it every year in large numbers, would be increased by the publication of chart guide-books and scientific and popular catalogues of the collections.

The Arboretum, with its two hundred and twenty acres, is now one of the largest scientific gardens in the world. By the agreement with the City of Boston, under which it is open to the public every day in the year, the Arboretum has obtained from the city about $750,000, spent in land, construction, and representing the capital of money used for annual maintenance and police protection; and the value of the real estate, collections and improvements, is probably not less than $3,000,000. The income, however, from the endowment of the Arboretum is entirely inadequate to carry on an establishment representing such a capital, even along its present restricted — and your Committee believes entirely inadequate — lines of work. Without the financial aid of the Director and of some of his personal friends, who for years have responded liberally to all his appeals for aid, the Arboretum could not have attained its present position, and without this aid its work would have to be at once curtailed. Your Committee has felt, therefore, that its first and chief duty was to increase the endowment fund of the Arboretum in the hands of the President and Fellows of the University.

During the present year they have obtained, in response to a circular which has been widely distributed, an addition of about $96,000 to the permanent endowment of the Arboretum, making

$141,670 received from subscribers in the last two years. Thirty thousand dollars of this was set aside as an improvement fund, and the balance, $111,670, added to the permanent endowment. These recent gifts increase the endowment to $280,000; of this the income of $20,000 is restricted. At four and a half per cent. the income of the Arboretum from its endowed funds, exclusive of gifts for immediate use, is now only about $13,000, a sum which is entirely inadequate to meet the ordinary expenses of the establishment, to say nothing of extending its work. Moreover, the income must gradually decrease with the decreasing value of money.

The Committee believes that an endowment of at least $1,000,000 is needed for the Arboretum, and that it can perform no greater service to the University or to the community than in endeavoring to place this institution on a firm financial basis.

STEPHEN M. WELD,
N. MATTHEWS, JR.,
WALTER HUNNEWELL,
CHARLES E. STRATTON,
WILLIAM B. DE LAS CASAS,
MARY S. AMES.

MAY 7, 1902.

CXV.

REPORT OF THE COMMITTEE TO VISIT THE LAWRENCE SCIENTIFIC SCHOOL.

To the Board of Overseers of Harvard College: —

Your Committee to visit the Lawrence Scientific School wishes to report that it has inspected the new and fine buildings lately erected for the Engineering and Architectural Departments. It is to be hoped that as good a one for the Department of Chemistry may soon follow; it is perhaps even more needed, the present quarters being entirely inadequate for proper instruction.

In this connection your Committee desires to express the hope that the Governing Boards of this University and of the Massachusetts Institute of Technology may in their wisdom soon find some way by which the superior advantages of each may be best utilized for the common good, thereby saving much needless expense and duplication of forces.

Your Committee takes great pleasure in noting the great advance shown in the last few years, both in the number of students taking the whole or a partial course, and in the result. The number has increased 41%, and the number of those graduating per annum has increased from 18% to 25%; at the same time the requirements have increased over 80%.

F. L. HIGGINSON,
E. D. LEAVITT,
JOHN LAWRENCE,
CHAS. H. MANNING, U.S.N.,
A. LAWRENCE ROTCH.

May 7, 1902.

CXVI.

REPORT OF THE COMMITTEE ON FRENCH.

To the Board of Overseers of Harvard College: —

The French Department, which includes sixteen courses, divided into thirty-five divisions of from thirty to eighty men each, would seem, in the judgment of the Visiting Committee — so far as its limited opportunities can enable it to judge of so large an organization — to be admirably organized and well taught.

It would be impossible, under the present conditions, for the Committee to become conversant with the details of all of the work; but the results of a few visits, and of conversation with the professors and with pupils, have impressed the Committee with the excellence of the work done, and with the great and growing interest taken in it by both teachers and scholars. But, in order to cover more satisfactorily the work of visiting and understanding so large a Department as the one in French has grown to be, the Committee feels the need of more working members; and so recommends that it be increased from three to five.

The Committee is of the opinion that the Department would be much strengthened by the addition of one or more Frenchmen as teachers.

Although it is a distinct advantage to have some of the courses taught by men who are not French (who can perhaps understand better the difficulties of the pupils), yet the peculiar charm and interest which only a Frenchman carries with him in giving instruction in his own language, is too valuable to be overlooked. Out of eighteen professors and instructors teaching French in the University, only three are, strictly speaking, French.

In order to bring this suggestion to a practical basis, the Committee makes the following recommendation, which is also suggested by the Department itself: —

The tentative establishment of a Lectureship in French Literature, with a salary of $2000. The holder of the position should be a young Frenchman of superior talent and training, chosen by the most competent judges to be found in Paris; he should keep the office for a year, with the understanding that he might be reappointed

for a second year, if such action seemed desirable; his work here should consist of conducting, in French, some of the more advanced courses in French Literature. The lectureship might be so administered as to be awarded, as a sort of prize, to one of the most promising graduates of the École Normale. If one of the lecturers, after a trial of a year, or two years, at Harvard, should prove to be exactly the kind of man it would be desirable to keep, he might receive a permanent appointment, and the lectureship could then be discontinued.

While not prepared, owing to its present limited knowledge, to criticise the appointment of young graduates of the University as Teaching Fellows in the Elementary French courses, the Committee would not at present recommend an extension of the system until it has had a better opportunity of observing its advantages.

The Committee has had called to its attention the fact that many theses for the degree of Ph.D., which would be of real value to the cause of learning, become of no value owing to the fact that it is not possible for our graduate students to stand the expense of publishing them. The outside knowledge of a part of the intellectual work done at Harvard is wanting from lack of evidence; and a substantial assistance to our graduates, in the way of securing due recognition and suitable position, is not open to them.

A most important thesis written last year, for example, is awaiting publication; and this year, at least three dissertations in Romance should be published at once. The Committee would warmly recommend an appropriation for the publication of these Ph.D. theses.

An increase of financial aid for graduate students is urgently needed. This year there are, in Romance, 12 applicants for resident graduate scholarships. Of these, nine are excellent candidates; and of these nine, probably not more than two will secure stipends. Possibly one or two of the remaining seven will continue to come here without aid; but the University will, in any case, lose about half a dozen men of the highest intelligence, scholarship, and ambition, through lack of the same financial assistance which is generously given to many undergraduates whose abilities are not to be compared with theirs.

Respectfully submitted,

J. TEMPLEMAN COOLIDGE, Jr.,
CHARLES J. BONAPARTE,
NATHAN APPLETON.

May 7, 1902.

CXVII.

REPORT OF THE COMMITTEE TO VISIT THE BOTANIC GARDEN AND BOTANICAL MUSEUM.

To the Board of Overseers of Harvard College: —

The Committee to visit the Botanic Garden and the Botanical Museum have the honor to submit the following report: —

The fiscal year of the Botanic Garden and Botanical Museum, now drawing near its close, has not been marked by any change of policy. The endeavor has been made to maintain the efficiency of the Garden and Museum, although, owing to the very meagre endowment and slender income, it has been found necessary, as heretofore, to incur certain risks. The income annually falls four thousand dollars short of meeting even the economical or, we may say, parsimonious budget. Thus far the Director has been able to secure by gifts, almost every year, the amount required to make up the deficiency, but he calls the attention of the Committee to the unbusiness-like and unsatisfactory method of procedure.

In 1889–90, when the Mineralogical section of the University Museum was approaching its completion, the late Professor Cooke desired to sell to the Botanical Department a portion of his section. The amount asked for this space was $9000. By advice of the Garden committee, the purchase was made, and payment effected by means of money borrowed from the Corporation, on which interest at 5% was charged against the Garden account. The space was very valuable for purposes of investigation and instruction, and was considered as a justifiable acquisition. Subsequent committees agreed that the purchase was a wise one, but they took no steps towards paying the debt. In the meantime certain other expenditures in fitting up the newly acquired space added to our indebtedness, carrying that single item to twelve thousand dollars. Last autumn the Director brought the matter to the notice of Mr. H. H. Hunnewell, explaining the condition of affairs. Mr. Hunnewell sent his check for the whole amount, namely twelve thousand dollars, thanking the Director for bringing the subject to his attention. This timely and gracious payment reduced the entire indebtedness of the Garden to about $6,625.

Mr. Edwin F. Atkins, a member of the Committee, has been much interested in the cultivation of the sugar cane in Cuba. The Director brought to his attention some years ago the radical improvements now going on in certain tropical countries, particularly Java, in the cultivation of cane, and he suggested that the Botanic Garden would be willing to undertake experiments in the same direction at some favorable point in Cuba. The plans have been carefully matured and are now in process of execution near Cienfuegos. Mr. Atkins informs the Committee that the enterprise has been well thought out and is exceedingly satisfactory.

Primarily Mr. Atkins designs, under the direction of the Harvard authorities, to support in Cuba an efficient scientific station for research in regard to tropical plants, especially the sugar cane and the economic plants generally. Second, in order to make the station of the largest use to the Cubans, he proposes to have things cultivated at the station which can be proved then and there to be safely profitable in the Island. And thirdly, he desires that experiments should be carried on at the station in the line of improving the principal useful plants of the tropics. To the Director and the Assistant Director of the Harvard Garden are entrusted the entire care of selection of material, the prosecution of the researches, and the general direction. Mr. Atkins provides the land, materials, including fertilizers, plants and seeds, and furnishes adequate labor and conveniences for all necessary work. The chief difficulty, of course, is the remoteness of this Harvard Station in Cuba from the advisory board in Cambridge, but this is partly helped by the occasional visits of inspection and direction which the Director and Assistant Director have made and propose to make.

The College and its Garden assume no pecuniary responsibility. The University simply and willingly aids in a plan by which some of the resources of our neighboring island may be possibly augmented, and by which, incidentally, scientific applications of botany may be successfully made. The Committee feel under obligations to Mr. Atkins for the generous manner in which he has inaugurated this praiseworthy enterprise.

At the Harvard Station in Cuba there are now more than one hundred sorts of plants growing successfully under observation, and some of them are on the way to yield profitable returns. The Director is now arranging with the most experienced collector of plants in this country, Mr. C. G. Pringle, for a collecting trip through Mexico, whence certain cultivated plants are to be shipped to Cuba for experimentation. This experienced collector has also

been one of the most successful hybridizers of grasses in the world. Next winter Mr. Pringle is to undertake plant-crossing and seed-breeding at the Station in Cuba. The skilful gardener of Mr. Oakes Ames has already carried on preliminary and successful studies at the Station, and he reports most encouraging results in certain directions.

Under the prudent and economical management of the Superintendent of the Garden, the grounds and houses are in a state of commendable neatness and activity. Thorough inspection has convinced the Committee that a great deal is done with very little money.

The memorial greenhouses and attached laboratory are in excellent condition, and well repay close examination, not only for their condition, but also for the character of the work there done. The generous donor is satisfied that a memorial which keeps ever active the spirit of research into unknown things is a memorial of the very highest utility and beauty.

The important improvements which the generosity of a sincere friend of the University has enabled the Director to make in many directions at the Museum will be spoken of in a later report.

For the Committee,

WILLIAM A. BANCROFT.

June 11, 1902.

CXVIII.

REPORT OF THE COMMITTEE TO VISIT THE DIVINITY SCHOOL.

To the Board of Overseers of Harvard College: —

The present teaching force of the Divinity School consists of seven professors, two assistant professors, two instructors, one lecturer, and the librarian. The School has recently lost two men of great eminence and wide influence, Professor C. C. Everett and Professor J. Henry Thayer. The present Dean, Professor F. G. Peabody, and Professor E. C. Moore, recently appointed, deepen in the Faculty the sense of direct obligation to the Churches, and the wise appreciation of their needs. Professor George Moore, also recently appointed, adds strength and distinction to the scientific equipment of the School.

While a report on the separate departments would no doubt be useful, your Committee prefer at this time to dwell upon certain general considerations that bear upon the character and purpose of the School, and especially upon its marked fitness as a servant of the Churches to-day.

The surest approach to the proper appreciation of the importance of the Divinity School would seem to be from the side of the Churches. They are engaged in practical work of infinite moment to the country. They exist to keep the mass of our people in vital sympathy with the ideal life of the world, and in particular to bring to bear upon character the forces resident in the Christian ideal of existence. In the preservation of the humanities that conserve the sanctity of home, in the training of children, in the instruction and guidance of youth, in the subjection of all classes to the power of an exalted conception of human life, the work of the Churches is essential to the perpetuity and the hope of our civilization. Few indeed are aware of the philanthropic work done by the Churches; fewer still are conscious of the wholesome power of these organizations in the repression of anti-social impulses, in the transformation of animal feeling, in the elimination of strife and the promotion of friendship among men; fewest of all adequately measure the results accomplished in presenting in engaging light the highest ideals, in securing

sincere devotion to them, and in mitigating for the unfortunate the burden of existence and filling the human heart with courage and hope.

For this unceasing service to the community an unbroken succession of honorable and efficient servants is required. And here lies the reason for the interest which serious and intelligent men should take in the character of the Divinity School. It is the feeder of the pulpits of the land; upon its character depends the character of the ministry, and indirectly the character of the people under that ministry.

The Divinity School should be a teacher of religion. The science of religion, that is, the knowledge and the treatment of matters of fact, should be as advanced and as exact as the nature of the subject will admit. The philosophy of religion should be as ample and as rich and as adequate as the labors of all the great historic thinkers render possible for the theologian of to-day. In particular the study of the Hebrew and the Christian scriptures should be scientific, and the ascertainment of their content and teaching wrought over into a message for the present age. Every Divinity School should be founded upon the primacy of fact, upon the divinity of truth; other foundation can no man lay, and keep for his School the respect of serious and intelligent people.

But the Divinity School must add to the function of the teacher that of the inspirer. Knowledge is not enough; knowledge must take hold of the imagination and the heart. To do this it must be in the imagination and the heart of those who teach it; it must be as a fire in their bones. The great teachers have always been great inspirers. A Divinity School cannot be a school of anatomy and hope to live. The reality with which it deals is living, and that reality must live in the imagination and the emotion of those who teach it. Puritan New England has abounded in great teachers of religion, and they have been without exception men who put the truth into their own souls and then put both into the souls of their pupils.

There is still another function of the Divinity School: it should be an exemplar of religion; it should have its religion in the intellect and in the feelings and in the will; religion as truth and as beauty and as goodness should be its three-fold distinction. The vocation of the Divinity School culminates in work for the kingdom of God, both for teacher and pupil.

It is because your Committee believe that Harvard Divinity School meets reasonably and hopefully these three great tests that they have

dwelt upon them in this report. The School has recently undergone reorganization. It is believed that a better equipped Seminary of sacred learning in respect of the three functions named does not exist in this country. Here the free pursuit and the unforced discovery of truth are provided for by the absence of creed restrictions, by the presence of teachers of different religious heredity and early environment and of different temperament and bent. Here truth in its own absolute character, and Christian truth in its approved supremacy have an unrestricted opportunity to fire the imagination and engage feeling. Here the Seminary is put for its life upon utilitarian grounds; it cannot live by any declaration that it is orthodox or that it is heterodox, it can only live in the performance of a unique and indispensable service. This Divinity School thus constituted and equipped, a Seminary whose privileges are at the same time its most commanding obligations, should achieve special distinction in the service of the Church and awaken great hopes among all its friends.

Finally, as the character and preferences of the Churches in New England and elsewhere vary considerably, there is reason to hope from the present inter-denominational organization of the Divinity School that various types of preacher may be sent forth; now a Trinitarian teacher will predominate in the making of a minister, and again a Unitarian, and yet again a teacher who cares little for exact definition and much for the soul of Christianity. It is believed that this Seminary has committed itself with new devotion to the training of men as servants of the Churches of all denominations, and as such it is earnestly commended to the generous consideration of this Board, and through this Board to the confidence and the support of the Christian public.

For the Committee,

GEO. A. GORDON,
Chairman.

June 11, 1902.

CXIX.

REPORT OF THE COMMITTEE ON ANCIENT HISTORY, MEDIAEVAL HISTORY, AND ROMAN LAW.

To the Board of Overseers of Harvard College: —

The Committee having reviewed the subjects of study, having visited a portion of the classes, and had conference with some of the teachers, competent to speak for their colleagues, report as follows: —

The subjects assigned to this Committee do not appear to coincide with any integral department of instruction in the University. As far as the important subject of Roman Law is concerned, their services are not needed, there having been no course opened on that subject in the year 1901–02; one has been announced for 1903–04. The views of the present Committee on this topic accord with those conveyed in the report of two years ago.

The courses in Ancient History, as that term is generally understood, have been reduced to a minimum. It is understood from conference with instructors in both the Historical and Classical Departments, that the teaching of Greek and Roman History in past years had not been satisfactory, and that some difficulty had been found in providing it for the current year. A single course in Greek History, conducted by Professor J. H. Wright, to a class of between twenty and thirty members, forms the entire teaching in a subject of such magnitude and interest; and this is counted only as a half-course to those who present the Advanced History for admission. The courses in Roman History, and in Greek Constitutional Law, given in past years, are omitted in this; and the announcement is made that the course in Greek History will be omitted in 1902–03.

It is understood, however, that the work in Roman History is to be in the hands of an eminently competent instructor, Professor Haskins, formerly of the University of Wisconsin, and it is believed that in his hands and Professor Wright's the instruction in Ancient History will be in every way more stimulating than it has been in the past. Professor Wright's interest in his subject, and thorough acquaintance with it were shown clearly in a visit to his class, and the value of having a profound classical philologist in charge of this branch of history will not be questioned. Yet the Committee must

express their regret that Harvard College has been unable to find among her own alumni historical students competent to conduct courses in Ancient History, and also that, be the instructors who they may, the amount of instruction is very meagre. The subject of Ancient History has developed greatly in range, in depth, and, it may be added, in human interest, by the discoveries in many districts of Western Asia, in Egypt, in Italy, and in these last years in Greece. Questions which were complacently believed to be set at rest have sprung up again, and can no longer be answered with the confident dogmatism of forty years or even of twenty-five years ago, and Harvard College should be a place where the full range of these subjects is open to students. Moreover, the Committee believe that Ancient History should not be confined to select and advanced classes, or driven back, in its earlier study, upon the preparatory schools. While certain phases of it are most essential in a liberal preparation for College, there is a field of study, in the histories of Greece, Rome, and the older nations, eminently suited for large classes of undergraduates, under enthusiastic instructors. The Committee venture to suggest that a portion of the Gurney Fund might appropriately be used for a professorship of Ancient History, — the department in which Dean Gurney was giving instruction at the time of his decease.

Instruction in Mediaeval History may be said to begin with History 1, the general course, conducted by Professor Coolidge and his assistants, and extending over the whole of the immense period from the Gothic invasions to a comparatively recent period. It is intended as an introduction to historic thought and study of an independent character, and many excellent books for private reading are suggested; yet they all bear a special character, and seem rather meant for students of single periods, than for a general course. Professor Emerton's book on Mediaeval Europe is perhaps the only one which answers to the latter description. But to discuss this very popular course at full length would be trenching on the field of another committee.

The course entitled the "First Eight Christian Centuries" may be considered as belonging partly to Ancient and partly to Mediaeval History. This course is announced by the Divinity Faculty and is closely related to that on the Mediaeval Church, which is not given in 1901–02. The History of the Early Church forms such an important part of all early Mediaeval History that these courses, in spite of their ecclesiastical titles, are highly valuable to all students of Mediaeval History, and are excellently conducted.

The course designated as History 8, and entitled French History to the reign of Francis I, appears to be a special study of the development of French History for a limited, though doubtless very important, period, and it is difficult to regard it as what it claims to be, a continuation of the introductory course. That on English Constitutional History, or History 9, is also conducted within very narrow limits, starting from the translation and explanation of the principal documents in Stubbs's Select Charters. This course, once one of the most popular, can hardly be called so now. Yet the development of the English Constitution in the middle ages is of vital interest to the descendants of Englishmen, and might be made exceedingly attractive, and if one may use the phrase — human. The Committee cannot refrain from expressing the opinion that the energy of the very able teachers in Ancient and Mediaeval History is too emphatically directed to the direction of a limited number of specialists, rather than making their noble study as it should be, a favorite element in that liberal education which it is hoped Harvard College will never renounce.

Besides the course on Greek Constitutional History, not given this year, there are offered for graduates one on the sources and literature of English Constitutional History, supplementary to the one just mentioned, and intended for investigators. There are also, for advanced specialists, courses on Church and State and English Mediaeval Institutions. The Committee feel with both of these that they do not require sufficient general preparation, and too little opportunity is given to study the heart of English History.

The new school of historical study professes to go at once to the original documents and reconstruct from them the life of the nations, with very little assistance from text writers. This may be practicable in Mediaeval History; but hardly in Ancient, where the very "sources" themselves, to use the favorite phrase, are largely at second hand.

The Committee believe that there is something still to be done by enthusiastic and authoritative teachers, who shall not encourage their pupils to plunge into original and specialized research till they have laid a solid structure of acquaintance with a wide range of facts and standard writers.

WILLIAM EVERETT,
JOHN NOBLE,
ROGER F. STURGIS,
A. P. STONE.

June 11, 1902.

CXX.

REPORT OF THE COMMITTEE ON ENGLISH LITERATURE.

To the Board of Overseers of Harvard College: —

An annual meeting of this Committee, for conference with the instructors, was held January 15, 1902, and was attended by Messrs. Grant and Perry, besides the chairman. The visits of the Committee during the last year have not been numerous, but have been addressed, so far as practicable, to the more salient points. Professor Hill's exercises still contain the high qualities before attributed to him in these reports and are largely colloquial and uniformly heard with attention.

It is always a pleasure to visit the classes under charge of Professor Kittredge. Few instructors in any university can exhibit, as Horace Mann said of one of this profession, the nerves of the pupils so thoroughly in contact with the muscular system of the teacher, as in this case. The occasion seems less a mere contact between the two than a joyous intellectual game to which every one contributes, while its value is never relaxed. It is easy to say that Shakespearian study is a thing too secular for a college and not sufficiently academical. But can any good reason be given why Shakespeare should not be as seriously studied as Aeschylus or Aristophanes? If the test of valuable knowledge lies in the memory, it is probable that some of Professor Kittredge's solutions of Shakespearian situations and his interpretations of the very silences of Hamlet may outlast in the minds of his pupils any reminiscences of Homer beyond the first solemn line of the Iliad.

Mr. Gardiner's course in the English Bible was new to the Committee, and though not largely attended by students, fifteen in all, it seemed to deserve a far larger number of hearers. The instructor has hit the happy medium between dignity and dogmatism; and while perhaps leaning perceptibly to the conservative side, he yet avoids all trivial debates and lays a good foundation for independent study in later years. Catholic and Protestant, Jew or Gentile, might hear these lectures side by side and might proceed from them to individual investigations, at their pleasure.

Mr. Fletcher's course in the English Department — literature between Scott and Wordsworth, — while in itself interesting and valuable, was greatly marred, in the opinion of the present writer, by the defects of the hall in which it was held, this having two doors on opposite sides, each in a corner and each almost out of sight from the platform. Since these doors are left unlocked, they offer endless temptation to idle students to slip out without notice, and this is done, from time to time, not without creating some amusement among those who stay in. It would seem that the whole process might be intercepted, as at the Lowell Institute in Boston, by locking the doors, and it appears that some professors have adopted this course. The lectures in this course seem good and interesting; but the discipline of larger classes is notoriously more difficult than that of smaller. For that very reason, it would seem there is needed some increased strictness.

Professor Wendell has renewed during the present year his very successful course on the literary history of America, with the difference that he is now able to use as a text-book his work on the subject, which before served only as a basis for his lectures. The change no doubt brings disadvantages, as well as advantages, but the added maturity which comes from criticism must have been a gain on the whole. Professor Wendell's frank and persistent individuality of thought and method give him a peculiar hold upon his students, and this was never more visible than at his closing exercise, which, like the conclusion of his great work, covered a very wide ground, yet was wholly extemporaneous and was what might really be called a heart-to-heart talk with young men. That they felt it as such was visible, and their prolonged applause after the address was unmistakably a fine verdict on his year's labors.

In the official pamphlet of the English Department (Univ. Publications, N. S. 18), after mentioning four especial courses in English literature and after designating the English writers to be treated, there annually appears an addition to each paragraph in a form like this: "The course may discuss briefly American writers of this period, as Cotton Mather." A similar announcement inserts in the same guarded manner the names of Jonathan Edwards and Franklin; a third mentions Brockden Brown, Irving, and Cooper; and a fourth, Emerson, Longfellow, Lowell, Poe, and Hawthorne. This arrangement follows out that habit of utter subordination of American literature which prevailed so long in the University courses and which is now in part removed by Professor Wendell's important series. Yet it might well be asked whether a change in the original form

of statement might not now be made, even for the other courses, since the present phraseology has undoubtedly, though doubtless without special purpose, a rather apologetic and perhaps even a patronizing tone.

THOMAS WENTWORTH HIGGINSON,
Chairman.

JUNE 11, 1902.

CXXI.

REPORT OF THE COMMITTEE ON ZOÖLOGY.

To the Board of Overseers of Harvard College: —

Your Committee visited the Zoölogical Department on January 30th, and passed half a day there with the instructors.

There is a slight increase in attendance, — that in the course on vertebrates is doubled. This department will get one more room, and also rooms in the basement when the new wing is occupied.

The enlargement and furnishing of the Aquarium are still desired.

No new courses have been given this year.

The need of instruction in Systematic Zoölogy is still felt.

The fund for publication remains as before.

It was considered advisable that the value of the training in the Zoölogical Department should be more forcibly brought to the attention of undergraduates. But since the visit of the Committee, the new course in Science preparatory to the study of Medicine, of the Lawrence Scientific School, has been announced, and this object is fulfilled.

An elementary and special short course in Evolution for undergraduates is advised, to awaken their interest in Science. It must be noted, however, that the principle of Evolution is carried through all the courses now.

A better water supply is obtained and a cold aquarium is planned. Interesting experiments in the inbreeding of guinea pigs by Dr. Castle, and of crossing in mice by Mr. Allen, have been carried on, at almost no expense.

DAVID W. CHEEVER,
CLARENCE JOHN BLAKE,
WILLIAM BREWSTER.

June 11, 1902.

Note. — Specifications for an Aquarium are prepared and on file.

CXXII.

REPORT OF THE COMMITTEE TO VISIT THE STILLMAN INFIRMARY.

To the Board of Overseers of Harvard College: —

The Stillman Infirmary is intended for the use of such students of Harvard College as may, in the event of sickness during their college course, have need of its services.

The building, recently completed, is the gift of James Stillman, Esq., of New York, and is, in all respects, both as to construction and equipment, the best college hospital as yet established in this country.

The exterior design is in the Italian Georgian or Colonial style, frequently used for hospital work, as it gives great regularity and symmetry with large and frequent window openings. The walls above the basement are of rough water-struck brick and the trimmings of limestone with carved cornice and pilaster caps.

Generally speaking, the outside appearance of the building is generous and dignified without losing the simplicity which is the key-note of the older buildings of Harvard University.

For the accommodation of patients the building contains nine private rooms and two wards; for the accommodation of the matron, nurses, and servants, there are an office, bedroom and bath room for the matron, and nine bedrooms for the nurses, janitor, and servants.

The basement, above ground on two sides and lighted by large windows and with an entrance at level on the easterly end of the building, contains a large and commodious kitchen and laundry, serving room, servants' dining room, refrigerator room, store rooms, and the heating and ventilating plant.

Situated on Mt. Auburn Street, Cambridge, overlooking the Parkway, the adjacent grounds of the Cambridge Hospital, Charles River, and the Soldier's Field, the surroundings of the Infirmary are most attractive and the location well adapted to hospital purposes, affording abundant air and sunshine and permanent isolation from other buildings.

The land belonging to the Infirmary extends from Mt. Auburn Street to the Parkway bordering the Charles River, carries with it

an option on adjoining land, is, in its present extent, sufficient to accommodate a second building and is free from restrictions as to its use in the care of contagious diseases.

The general plan of the building is rectangular, of four stories above the basement, with corridors running lengthwise of the building and terminating at the east end in an iron and slate staircase which runs from the basement to the top of the building, independent of the main staircase of iron and marble running from the first floor, at the left of the front entrance, to the fourth or top floor. Further provision is made for communication between the floors, and especially for the transportation of patients, by means of an elevator shaft running from the basement to the top story, the elevator for which is not yet installed.

The main entrance, on Mt. Auburn Street, is across a stone terrace above the street level, through a double door into a vestibule and entrance hall opening on the right into the office and matron's suite, on the left into the main staircase hall; in the rear, double doors lead into the corridor from which access is had to a small operating room, with sterilizing room attached, and to three large single bedrooms which may be used for operative cases, or, in the event of critical illness making the presence of members of the patient's family desirable, as guest chambers; these rooms all have a southern exposure: on the north side the corridor affords a private entrance to the matron's rooms and gives access to the diet kitchen and to a small dining room for patients or nurses.

The floors of the first story, with the exception of the entrance hall which is of marble, are finished in a fire-proof material called asbestolith put on in a pliable condition and turned up at junction with the walls and at all corners, giving a smooth water-proof finish; the same material is also used for the floors of the serving rooms throughout the building. The inside walls of the corridors, rooms and wards are finished in hard cement plaster with rounded corners, and the doors, which are double for the patients' rooms, are of oak, smooth finish, without panels, and with rounded edges and settings; on the second, third, and fourth stories the floor finish is in hard pine.

The second and third stories are intended for patients; the floor plan is the same in both and the distribution of space gives, at the west end of the building, a large ward capable of accommodating ten beds with a cubic air space of over fourteen hundred feet per patient. On the south side of the corridor the space is divided into separate rooms each with about twenty-five hundred cubic feet of air space,

while on the north side are the toilets, baths, the staircase and elevator wells, and the serving rooms, connected with the kitchen serving room in the basement by means of dumb waiters. The fourth story is intended for the accommodation of nurses and servants, and is divided into separate rooms, three of which are large enough for two beds; on the north side are two separate bath rooms and toilets which, like the bath rooms and toilets throughout the building, are floored and wainscotted in white marble.

The planning of the fourth story is such that, in case of necessity, it could be used for patients, the nurses and domestics being provided for elsewhere, in which event, with ten beds in each ward, two beds in five of the larger single rooms and the fourth floor used for patients, the hospital accommodation of the Infirmary could be increased from twenty-nine to forty-five beds, with one thousand cubic feet of air space per patient, which, in consideration of the excellent system of heating and ventilation, would be sufficient. By this system the outdoor air is first filtered by being drawn through forty-two cloth bags each a foot in diameter and nine feet in length, passed between steam radiators and driven over the building through conduits by a seven-foot fan, there being, in addition, a provision for so mixing the hot and cold air that sufficient ventilation may be, at all times, afforded without excessive heat. All of the rooms have either fire-places or registers opening into conduits; in the wards there are both, and there is therefore ample provision for the exit of foul air. The halls and serving rooms are, in addition, heated by the direct hot water method or by steam if preferred, two horizontal tubular boilers supplying steam for heating purposes, and a third upright boiler supplying steam for the laundry and kitchen.

The laundry and kitchen are fully equipped with all necessary appliances and are, together with the heating plant, equal to the demands of a much larger building, having been intentionally so designed in order to be able to furnish heat, laundry service, and cooking for contagious wards in addition to the present building.

The equipment of the building as to bedsteads, furniture and supplies is of the best quality throughout. The bedsteads and other furniture are mostly of special design, and the beds are all supplied with pillows, blankets, and covers ready for use.

Admirably adapted and provided as the Stillman Infirmary is for the purposes for which it is intended, the fact still remains that there is no adequate fund at the command of the College the income of which can be applied to the care of poor sick students. Of the

more than three thousand Harvard students in Cambridge, between five and six hundred are either wholly or partly working their way through college or, in other words, are wholly or partly supporting themselves and paying their tuition fees from the income derived from some form of remunerative work outside of the time required for college studies; in many cases the labor required is excessive and the necessary economy of living expenses such as to make healthful living difficult; to such men sickness during the college course comes as a calamity much to be dreaded, both because it means the interruption of studies and the suspense of income or the encroachment upon meagre savings.

To make the Infirmary useful to this class of the College community it is necessary to procure a fund the income of which shall be devoted to the care of poor sick students in Harvard College or to secure the endowment of beds in the Infirmary, such endowed beds to be devoted to the same purpose. The income of a fund of one hundred thousand dollars would be adequate to meet present needs, as indicated by the recent reports of the Medical Visitor of the College, while the endowment of the twenty ward beds in the Infirmary, in the sum ordinarily recognized as that required for the establishment of a hospital free bed, would provide an equivalent income.

One of the classes has already established a precedent by voting its class funds for the endowment of a free bed in the Infirmary, and such endowment is earnestly commended by your Committee to other classes and to individual graduates as the means of establishing a memorial of lasting benefit to Harvard students.

Under the projected administration of the Infirmary, sick students who are able to pay for nursing and medical attendance, and who have heretofore remained in their rooms in Cambridge or gone to private hospitals or to the Massachusetts General or the Cambridge Hospital as private patients, can now have the advantage of going to the Infirmary at equivalent expense, with the further advantage of being in an institution the property of and controlled by the College, and in which, moreover, ample provision is made for the accommodation of the parents or guardian of any student so seriously ill as to make such presence desirable; paying patients in the Infirmary will be entitled to employ medical advice of their own choice at their own cost; patients unable to pay will be entitled to the medical service already supplied without cost to the students by the College.

There is one more important requisite in connection with the Infirmary to which your Committee desires to draw attention, and that is the establishment of a contagious building for the care of

measles, scarlet fever, mumps, and diphtheria. Epidemics of these diseases are liable to occur and spread rapidly among the students. This is especially true of measles, a disease much more serious in its complications and its after effects than is generally supposed. There being no restrictions on the land belonging to the Infirmary, ample space and sufficient provision for light, heat, laundry and cooking, a building to be devoted to the care of students suffering from the above-named contagious diseases might well be made a gift by some intending benefactor of the College.

For the Committee,

CLARENCE JOHN BLAKE,
Chairman.

October 15, 1902.

CXXIII.

REPORT OF THE COMMITTEE ON REPORTS AND RESOLUTIONS.

To the Board of Overseers of Harvard University: —

The Committee on Reports and Resolutions respectfully submits that reports from the following Visiting Committees have been received during the last academic year: —

1. To visit the Museum of Comparative Zoölogy.
2. To visit the Department of Mining and Metallurgy.
3. To visit the Peabody Museum of Archaeology and Ethnology.
4. On the Administration of the University Chapel.
5. On the Course in Architecture.
6. To visit the Observatory.
7. On the Course in Italian, Spanish, and Romance Philology.
8. To visit the Medical and Dental Schools.
9. To visit the Jefferson Physical Laboratory and Department of Physics.
10. To visit the Arnold Arboretum.
11. To visit the Lawrence Scientific School.
12. On the Course in French.
13. To visit the Botanic Garden and Botanical Museum.
14. To visit the Divinity School.
15. On the Course in Ancient History, Mediaeval History, and Roman Law.
16. On the Course in English Literature.
17. On the Course in Zoölogy.

A committee to visit the Stillman Infirmary was ordered by the Board at the meeting held on November 13, 1901. A report from this committee was received and presented at the last meeting of the Board, October 15, and has since been printed.

Under Section 28, of the revised Rules and By-laws, the several Visiting Committees appointed by the Board were instructed to report in writing at least once in three years. In November, 1896, a special committee, appointed to revise the list of the several Visiting Committees, made a statement showing how far this provision had been complied with during the six years from the initiation of the system

of Visiting Committees now in use to that time (1896). The present committee, — that on Reports and Resolutions, — as the successor of the special committees, which formerly had in charge the work of annually revising the list of Visiting Committees, now supplements the report then made. The Visiting Committees proper of the Overseers, — among which the Committee on Elections, that on Reports and Resolutions, and that on the Treasurer's Accounts are not included, — were, between 1890 and 1896, 36 in number. They now number 39. During the first six years (1890–96) 60 reports were presented to the Board by these committees. During the following six years (1896–1902) the number was practically the same, 61 appearing in the printed series. This series now numbers, altogether, 122 reports, including that of the committee to visit the Stillman Infirmary, presented during the current year.

Of the committees on the Departments, that on the Jefferson Physical Laboratory and Physics has reported annually. Those on the Botanic Garden, on the Bussey Institution, on the Lawrence Scientific School, on the Medical and Dental Schools, on the Museum of Comparative Zoölogy, on the Observatory, and on the Peabody Museum have made two or more reports each; as have also the Committee on the Administration of the University Chapel, and the Committee on Physical Training, Athletic Sports and the Sanitary Condition of all Buildings. Of the committees pertaining to the College proper, or Courses of Instruction, that on Zoölogy has, since 1896, made four reports, while those on English Literature, French, Geography and Geology, Ancient and Mediaeval History and Roman Law, and on Italian, have each made two or more reports. Three committees have never, apparently, made any report, — those on the Library, on the Classics, and on Botany. No reports from four other committees, — those on Government, on Mathematics, on Music, and on the Semitic Languages, — are included in the printed series of the six years since 1896. The last report from the Committee on Philosophy is dated November, 1896; that on Composition and Rhetoric, June, 1897; that on the Law School, April, 1898; and that on the Indo-Iranian Languages, June, 1899. Two Committees recently created, those on Engineering and on Education, have filed no report as yet.

In this connection, however, it is proper to state that the usefulness and efficiency of any given committee is not necessarily measured by the frequency of its reports. On the contrary, during the period in question (1896–1902) no committees have evinced more interest in the Departments or Courses they were appointed to

visit than the Committees on the Classics, on Botany, on Philosophy, and on the Semitic Languages. To each of them the University is under great obligation, a full sense of which should appear of record. While the Committee on Government, also, has filed no general report, printed in the series, it has made several special reports on matters referred to it; for, while essentially a Visiting Committee, with functions of the widest scope, the Committee on Government is also a standing committee of the Board.

The present committee desires to emphasize again what has already been pointed out in three previous reports, namely: that the usefulness and efficiency of the several Visiting Committees depend almost exclusively on those acting as their chairmen. Section 28 of the Rules and By-laws provides that each Visiting Committee shall hold, early in the academic year, at least one meeting with all the professors and assistant professors in the Department, or Course of Instruction, such committee is appointed to visit, in order to receive suggestions, inquire into defects and needs, hear complaints, and give encouragement and counsel. It is obvious that, unless the chairman calls the committee together in the manner and for the purpose set forth in the above By-law, the committee will not meet, and no work will by it be done. For a subordinate member of the committee to move in the matter would, naturally, be considered a reflection on the inactivity of the chairman; and hence it is not customary for members of the committees so to bestir themselves. Yet there is not one of the Departments of the University which does not afford a wide field for action and usefulness on the part of committees, and the Courses of Instruction can almost invariably be influenced and developed.

Your committee is glad to be able to report that the present system works as well as a system of this sort can ordinarily be expected to work. Many of the committees have shown an active interest in the work and welfare of their Departments or Courses, and, in several cases, the officers of instruction in charge of those Departments and Courses have expressed in the warmest language the sense of obligation they felt under to those composing their Visiting Committees, and a thorough appreciation of the interest evinced by them.

In view of the fact above set forth, to wit: the dependence of the committee for its usefulness on the activity and interest of its chairman, your committee would again call attention to a feature in the organization of these committees which has been referred to in previous reports. It is, of course, obvious that these committees must be apportioned among the members of this Board. It is

equally obvious that, unless there is special reason for pursuing a different course, a member of the Board appointed upon a committee should appear as its chairman. Meanwhile, as is well known, the Board of Overseers is composed largely of men in active life, who, with the best possible intentions, can ill afford the time absolutely essential to effective committee work in connection with such an institution as Harvard has now become. The Departments are large; the Courses of Instruction intricate. The course pursued by some of the members of this Board who have found themselves holding chairmanships of these committees has, under these circumstances, solved a difficulty. Calling their committees together, they have frankly stated their inability to devote adequate time to the work, and requested the committee to transfer the leadership in that work, either formally and permanently, by a change in chairmanship, or through an informal and temporary understanding, to some other member. In this way, the work of the committee has devolved on those having most leisure and the greatest interest in the Department, or Course of Instruction, and disposition to attend to it. In other words, the organization of each committee is in its own hands; and it is both proper and desirable that, under certain circumstances, the committees should choose their own chairmen.

At the stated September meeting of the Overseers, the three regular committees of the Board — those on Elections, on Reports and Resolutions, and on Government — were reported and approved. Mr. Bancroft was then named as chairman of the last named committee. On further consideration, it has seemed that the interests of the University would be promoted by the transfer of Mr. Bancroft to the Committee on Physical Training, Athletic Sports and Sanitary Condition of all Buildings. After consultation with Mr. Bancroft, and with his approval, this change has accordingly been made. Attention is here called to it. Mr. Lawrence has been substituted for Mr. Bancroft as chairman of the Committee on Government.

All of which, together with the accompanying list of those recommended to compose the several Visiting Committees for the current academic year, is respectfully submitted.

By order of the Committee,

CHARLES F. ADAMS,
Chairman.

COMMITTEES OF THE BOARD OF OVERSEERS FOR 1903.

ON ELECTIONS.

Moorfield Storey,
George F. Hoar,
James J. Storrow,
Stephen M. Weld,
Arthur Lincoln.

ON REPORTS AND RESOLUTIONS.

Charles F. Adams,
Edwin P. Seaver,
William A. Bancroft,
Winslow Warren,
Charles E. Norton,
Francis L. Higginson,
Moses Williams.

ON DEPARTMENTS.

To visit the Divinity School.

George A. Gordon,
Alexander McKenzie,
Charles F. Dole,
Archibald M. Howe,
George Batchelor,
James DeNormandie,
William H. Lyon,
Charles P. Bowditch,
Daniel Merriman.

To visit the Law School.

William C. Loring,
Charles J. Bonaparte,
Robert Grant,
John Noble,
Edmund Wetmore,
Louis D. Brandeis,
Joseph B. Warner,
Henry W. Putnam.

To visit the Medical and Dental Schools.

Francis L. Higginson,
David W. Cheever,
Charles F. Folsom,
George B. Shattuck,
Henry F. Sears,
Morrill Wyman,
William Sturgis Bigelow,
Henry H. Sprague,
Luther D. Shepard.

To visit the Bussey Institution.

Francis H. Appleton,
Moorfield Storey,
Francis Shaw,
C. Minot Weld,
Lawrence Brooks,
William S. Hall,
Augustin H. Parker,
Nathaniel I. Bowditch.

To visit the Library.

Herbert Putnam,
George E. Adams,
Charles S. Fairchild,
Samuel Hill,
Stephen Salisbury,
Charles C. Smith,
Elihu Chauncey,
Samuel A. Green,
Francis R. Appleton

To visit the Observatory.

Edwin P. Seaver,
Henry S. Huidekoper,
Charles S. Fairchild,
Simon Newcomb,
Robert Treat Paine,
Charles F. Choate,
Francis H. Peabody,
Charles P. Bowditch,
George I. Alden,
Anna P. Draper (Mrs. Henry Draper),
George R. Agassiz.

To visit the Botanic Garden and Botanical Museum.

William A. Bancroft,
David Pingree,
Nathaniel C. Nash,
Oliver Ames,
Elliot C. Lee,
Mary Lee Ware (Miss),
Edwin F. Atkins,
Arthur F. Estabrook,
Walter Hunnewell.

To visit the Gray Herbarium.

Francis H. Peabody,
Moses Williams,
George G. Kennedy,
Nathaniel T. Kidder,
Emile F. Williams,
Walter Deane,
George W. Hammond,
George R. White,
Sarah E. Potter (Mrs. W. B. Potter),
John E. Thayer,
Joseph R. Leeson.

To visit the Museum of Comparative Zoölogy.

Charles F. Folsom,
Henry S. Huidekoper,
David W. Cheever,
Louis Cabot,
Dudley L. Pickman,
William Brewster.

To visit the Peabody Museum.

Augustus Hemenway,
Charles P. Bowditch,
Henry W. Haynes,
Jesse W. Fewkes,
Clarence J. Blake,
Clarence B. Moore,
Elliot C. Lee.

To visit the Arnold Arboretum.

Stephen M. Weld,
Augustus Hemenway,
Walter Hunnewell,
Henry G. Russell,
William B. de las Casas,
Charles E. Stratton,
Mary S. Ames (Miss),
Abby A. Bradley (Miss),
Nathan Matthews, Jr.,
John E. Thayer.

To visit the Lawrence Scientific School.

Francis L. Higginson,
Morrill Wyman,
Eliot C. Clarke,
Erasmus D. Leavitt,
John Lawrence,
Abbott Lawrence Rotch,
Charles H. Manning.

To visit the Jefferson Physical Laboratory and Department of Physics.

Francis Blake,
James J. Storrow,
T. Jefferson Coolidge,
Elihu Thomson,
Erasmus D. Leavitt,
Frederick P. Fish,
Abbott Lawrence Rotch.

To visit the Chemical Laboratory.

Edward D. Pearce,
Charles F. Folsom,
Wolcott Gibbs,
Alexander Cochrane,
Samuel Cabot,
Edward Mallinckrodt,
William H. Baldwin, Jr.

To visit the Stillman Infirmary.

Clarence J. Blake,
David W. Cheever,
Augustus Hemenway,
Charles F. Folsom,
Morrill Wyman,
Philip B. Howard,
George B. Shattuck.

ON PHYSICAL TRAINING, ATHLETIC SPORTS, AND SANITARY CONDITION OF ALL BUILDINGS.

George W. Weld,
William A. Bancroft,
Robert Bacon,
Henry S. Huidekoper,
Robert F. Clark,
Edwin Farnham,
Maurice H. Richardson,
William Hooper,
Clarence J. Blake.

ON THE ADMINISTRATION OF THE UNIVERSITY CHAPEL.

Arthur T. Lyman,
William Lawrence,
Howard N. Brown,
S. McChord Crothers,
E. Winchester Donald,
George Wigglesworth.

ON THE TREASURER'S ACCOUNTS.

Moses Williams,
Stephen M. Weld,
Edmund Wetmore,
Alfred Bowditch,
Robert Gardiner,
William C. Endicott,
Gordon Abbott.

FOR THE COLLEGE.

ON GOVERNMENT.

William Lawrence,
Moorfield Storey,
Robert Grant,
David W. Cheever,
Samuel Hill,
Gardiner M. Lane,
Charles C. Jackson.

FOR THE COURSES OF INSTRUCTION.

ON THE SEMITIC LANGUAGES.

Jacob H. Schiff, Stephen Salisbury, George Wigglesworth,
Isidor Straus.

ON INDIC PHILOLOGY.

Edward H. Hall, A. V. Williams Jackson, William Sturgis Bigelow

ON THE CLASSICS.

Gardiner M. Lane, Henry W. Haynes, Prentiss Cummings,
Babson S. Ladd, James Loeb, W. Amory Gardner.

ON ENGLISH LITERATURE.

T. Wentworth Higginson, Robert Grant, Henry A. Clapp,
Bliss Perry, George W. Cooke.

ON COMPOSITION AND RHETORIC.

Charles F. Adams, George R. Nutter, Edward S. Martin,
Hammond Lamont.

ON GERMANIC LANGUAGES AND LITERATURES.

Henry W. Putnam, Godfrey Morse, Heinrich Conried,
Clement S. Houghton, Frederic M. Holls, Frederick P. Fish.
Louis Prang,

ON FRENCH.

J. Templeman Coolidge, Jr., James H. Hyde, Howard G. Cushing,
Charles J. Bonaparte, Russell Sullivan, Francis McLennan.

ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY.

George B. Shattuck, J. Randolph Coolidge, James Geddes, Jr.,
Justin H. Smith, William R. Thayer, Bennett H. Nash.
Henry R. Lang,

ON ANCIENT HISTORY, MEDIAEVAL HISTORY, AND ROMAN LAW.

John Noble, William Everett, Roger F. Sturgis,
Arthur P. Stone.

ON MODERN HISTORY AND INTERNATIONAL LAW.

James F. Rhodes, William F. Wharton, William G. Peckham.

ON POLITICAL ECONOMY.

Arthur T. Lyman, Charles S. Fairchild, Horace E. Deming,
John E. Thayer, John F. Moors.

ON PHILOSOPHY.

George B. Dorr, Joseph Lee, Richard H. Dana,
Richard C. Cabot, Thomas W. Ward, Reginald C. Robbins.

ON EDUCATION.

William Everett, Edwin P. Seaver, John F. Moors,
Margaret Lee (Mrs. Joseph Lee).

ON FINE ARTS AND ARCHITECTURE.

Charles E. Norton, R. Clipston Sturgis, Edmund M. Wheelwright,
Robert S. Peabody, Samuel D. Warren, Francis Bartlett.

ON MUSIC.

Horatio A. Lamb, Frederic S. Converse, Frank E. Peabody,
Arthur Foote, Charles S. Hamlin, George L. Osgood.

ON MATHEMATICS.

Seth C. Chandler, Percival Lowell, William Lowell Putnam.

ON ENGINEERING.

James J. Storrow, Charles H. Manning, Frederick P. Fish,
Samuel Hill, Joseph R. Worcester, Edward W. Rice, Jr.,
Edmund A. Stanley Clark, Charles C. Schneider.

ON BOTANY.

George R. Shaw, Nathaniel C. Nash, George G. Kennedy,
Walter Deane, Edward L. Rand.

ON ZOÖLOGY.

David W. Cheever, Samuel Hill, William Brewster.

ON GEOLOGY, MINERALOGY, AND PETROGRAPHY.

Charles Fairchild, George P. Gardner, Raphael Pumpelly,
William Sturgis Bigelow.

ON MINING AND METALLURGY.

Charles P. Perin, R. Alexander F. Penrose, Jr., Quincy A. Shaw, Jr.,
Edgar C. Felton, Hennen Jennings.

CXXIV.

REPORT OF THE COMMITTEE TO VISIT THE BUSSEY INSTITUTION.

To the Board of Overseers of Harvard College: —

The Committee to visit the Bussey Institution make the following report: —

We find the School in a very flourishing condition, the number of scholars having increased in recent years until now there are thirty-seven students receiving instruction. The result, however, is that the accommodations are much too contracted, and each of the instructors complains that he has not room enough for his classes or for the books which he needs to use.

The building which was erected for the School some thirty years ago is large enough in itself, but portions of it are unfinished, and the greatest inconvenience arises from the fact that a very considerable portion of the best space on the second floor is occupied by the State Board of Health for purposes not connected with the School. The Committee understand that when the attendance at the School was much smaller, and there was a vacant space which might readily be used, permission was given the State Board of Health to occupy certain rooms for the manufacture of anti-toxin and for investigations connected therewith, and that Professor Theobald Smith is carrying on certain very important and valuable investigations in these rooms, so that in part at least the space is used for the purposes of the University. To this arrangement it would seem that no just objection could have been made so long as ample space remained for the conduct of the Agricultural School, but your Committee are of opinion that the conditions have so far changed that this arrangement should cease.

Benjamin Bussey, by his will, left certain property to the President and Fellows of Harvard College in trust to retain certain real estate and there to establish courses of instruction "in practical agriculture, in useful and ornamental gardening, in botany, and in such other branches of natural science as may tend to promote a knowledge of practical agriculture and the various arts subservient thereto," and

provided for the erection of the present building thereon in these words, "And being desirous that every proper accommodation should be secured for the officers and pupils of said institution, I hereby order and direct my Trustees, as soon as they shall deem it expedient and consistent with the state of the trust funds, to cause to be erected on the 'Plain-field,' so called, next easterly of my farm garden, and bounded southeasterly on the road running from 'Woodland Hill' to Boston, an edifice, with convenient outbuildings, suitable in all respects for said institution: . . . And I earnestly enjoin it upon my Trustees to have the said edifice constructed and completed, with a proper regard to durability and beauty, and so as best to secure the comfort and convenience of the inmates of said building." It would seem, therefore, that by the terms of the trust the President and Fellows are bound to use the building for the purposes of the Bussey Institution so as to provide the instructors with all the accommodation that they need, and that only after their needs are satisfied can any other use be made of the space. The Committee recommend, therefore, that steps be taken to give the instructors in the Bussey Institution all the room that they need in the building, and that the arrangement with the State Board of Health be terminated.

It further appears that the present library is very imperfectly accommodated, and that the books held in the College Library which would be very useful in the instruction at the School are not placed there because there is no room for them. The present library is very valuable; it is difficult to use it in its present confined space, and it is, moreover, exposed to the risk of fire. The School should own an independent library building which should be fireproof, and which should be large enough to hold the whole library of the Institution. Such a building could be built at a short distance from the present building of brick and connected with it by some convenient passageway. The Committee understand that there is in the hands of the Treasurer accumulated income from the Bussey fund amounting to something like $27,000, which would be sufficient in all probability to cover the expense of such a building.

The Committee are advised that the graduates of the Bussey Institution almost to a man take up some form of agriculture, and that they find upon graduation without difficulty good situations, so that there seems to be an active demand for persons possessing the qualifications which the Bussey Institution can supply. It is undoubtedly true that farming and gardening are subjects which engage the attention of wealthy men to a larger extent every year, and there

is every reason to believe that the demand for an education which will fit a man for this work is likely to increase, and with it the number of students in the Bussey Institution. The Committee, therefore, strongly urge that increase in the facilities for students which is now imperatively demanded and for which apparently the funds of the trust are amply adequate.

FRANCIS H. APPLETON,
WM. S. HALL,
C. MINOT WELD,
FRANCIS SHAW,
AUGUSTIN H. PARKER,
LAWRENCE BROOKS,
MOORFIELD STOREY.

FEBRUARY 11, 1903.

CXXV.

REPORT OF THE COMMITTEE TO VISIT THE MEDICAL SCHOOL.

To the Board of Overseers of Harvard College: —

Your Committee has examined the Medical School, and, except for such repairs as may be necessary, recommends that no money be spent upon the present building. The plans for the new Schools are practically completed; and it is hoped that ground will be broken before May 1.

Your Committee desires to call attention to an inequality at present existing. The candidates for admission to the Medical School proper, in common with most of the other Graduate Schools, are now required to have earned the degree of A.B., or its equivalent, while those for the Dental School are not. Since both branches take their first year together, this difference may well cause serious inconvenience, the students coming as they do unequally prepared.

Your Committee suggests that it might be well to consider if, in view of this inequality — affecting as it does both instructors and students — a separate course for the Dental students might not be wise.

For the Committee,

F. L. HIGGINSON,
Chairman.

April 8, 1903.

CXXVI.

REPORT OF THE COMMITTEE TO VISIT THE LAWRENCE SCIENTIFIC SCHOOL.

MAJORITY REPORT.

To the Board of Overseers of Harvard College: —

Your Committee have as usual had a long conference with the Dean and other members of the staff of the Scientific School, during which they gave careful consideration to its present and future work.

As a result they believe that the School is filling a useful and honorable place among the technical schools of the country. But to do the very best work it should decide upon a definite line of development, — a line which would differentiate it from other schools which are now giving substantially the same courses of instruction.

The great advantages which are enjoyed by any department of Harvard University make the possibilities as well as the responsibilities of the future larger than those of any merely technical school. How best to utilize such surroundings is a grave question, but it seems to your Committee that the Scientific School should become more of a post-graduate one, like that of Law and Medicine.

To make a lawyer or doctor, three years of study after graduation is little enough; how then can a broad, well-trained engineer be turned out with less?

It seems to be the universal opinion of men engaged in large works of construction or development that there is an almost unlimited supply of graduates of technical schools who are competent to carry out any scheme under the direction of one fitted to lay out the broad lines of the work. To find those, however, capable of conceiving original work, is most difficult. It goes without saying that many are born to obey, but few to command. To enlarge the latter class, however, the Scientific School should give more opportunities for and encouragement of original investigation. This would attract the ablest men and ultimately give the School a place equal to, if not superior to, any in the world.

For various reasons the Scientific School has followed rather than led other institutions of the same character, but now is the time to lead, for the successful scientific men of the future will be graduates of schools of the same class as that of Law and Medicine.

There are some who believe that a purely technical school offers the greatest advantages for the highest education in pure science, but it seems to your Committee that the broader training possible in a university more than balances such concentrated efforts.

The future of the School is bright, but its opportunities can only be utilized by looking ahead, rather than by simply paralleling the courses of nearby scientific schools.

For the Committee,

JOHN LAWRENCE.

April 8, 1903.

MINORITY REPORT.

To the Board of Overseers of Harvard College: —

The undersigned, a minority of one of your Committee, desires to call attention to the present name of the School, its origin, and the possible advantage of a change or modification of it.

On examining the records it appears that after a long discussion the School was founded by a vote of the Corporation *February 13, 1847*, as the Scientific School in the University at Cambridge. This was approved by the Overseers February 27, 1847, and a faculty designated.

It seems probable that more or less discussion about it was held with others.

For *June 7, 1847*, Mr. Abbott Lawrence wrote a long letter on the subject, setting forth his views and giving $50,000 to the School, to erect a suitable building at a cost (estimated by him) of about $30,000, the balance to found a professorship of Engineering and Geology. One of Chemistry had been already created by the Rumford Fund.

Mr. Lawrence did not ask or in any way suggest that the School which was already named should be called after him.

June 27, 1847, this gift was accepted by the Corporation.

August 25, 1847, the Corporation voted that, in gratitude for the above donation, the name should be changed to the Lawrence Scientific School in the University at Cambridge.

This change the Corporation made by its own volition, and so far as it appears in no way by request of the donor.

Apparently it was found that the funds were too small, for for several years Engineering alone was taught.

Mr. Lawrence, dying in 1858, bequeathed a further sum of $50,000 (paid in 1860), — one-half for a Professorship of Engineering; one-half for a Professorship of Practical Sciences.

December 29, 1864, his son, Mr. James Lawrence, to still further aid, gave $50,000, — one-half to a Professorship of Engineering; one-half to a Professorship of Chemistry.

Since then no additional funds have come from that source as endowment, except that lately Mr. Arthur Rotch, a grandson, gave $25,000, and his sister $5,000, for specific purposes. In 1891, a daughter, Mrs. Rotch, gave $10,000, and in 1893 Mr. Arthur Rotch and his mother gave $3,500, this last to be used for expenses.

It has been found in this as well as in other cases that where the name of an existing family is attached to a school or college, it is difficult to obtain other and unrestricted assistance. Those who are ready and glad to aid the University are slow to assist this School specifically.

It seems to the undersigned that it would have been wiser in the past not to have attached the name of any living family to any branch of the University, and it is sincerely to be hoped that this course will be adopted in the future.

For thirty or more years the School was as then organized hardly a credit to the College. It was confessedly a place where almost any student could enter simply to have a good time and do little work that was of value. Its courses were few, it turned out a mere handful of graduates. It was not until taken in hand by the present authorities, properly organized, officered, and expanded to meet the true requirements of such a school, that it was of any real value, or attracted any large number of earnest students. All this, though, had to be done by the liberal use of the University funds, and as practically a branch of the academic department.

Under its present system and efficient management the School has in reality become almost as much a part of the College as either of its classes. Probably more than half of the College undergraduates take one or more of the Scientific School courses, and those of the latter take Collegiate courses.

It is impossible to-day to say exactly where the one ends and the other begins; it is equally impossible to make any but an arbitrary division of their budgets, either income or expense, but it is certain

that the cost of the Scientific School is far more than the income of funds strictly belonging to it.

The scope too has very much increased, the courses given being probably four to five times as many as were originally arranged for or even thought of.

In view therefore of all this, and of the increasing connection of the two departments, and thinking that possibly the Corporation may some day find it wise and even necessary to establish a new Scientific branch of the University, of which the Lawrence Scientific School would be but a fraction, and its name obscured, the undersigned suggests the advisability of consideration, and, if it meets with your approval, of once more changing and going back to the original name, which seems more in keeping with its position in the University. But that, in gratitude to the man and his descendants, who so generously gave the first large assistance, the present building (or a newer and finer one if built) should be named Lawrence Hall, that the Professorship of Engineering should be called the Abbott Lawrence Professorship, and that of
the James Lawrence Professorship, thus more thoroughly safeguarding the names of the original benefactors.

Several members of the Lawrence family have already given their consent to such a change, on the ground of both fitness and expediency, and it is to be hoped that all will. Such consent will of course make such action easier, but in any event your Committee desire to lay the matter before you for consideration.

Respectfully,

F. L. HIGGINSON.

The other members of the Committee dissent, feeling that such a change is in this case unwise and even improper, although they recognize that it would have been better not to have adopted the name originally.

F. L. HIGGINSON.

April 8, 1903.

CXXVII.

REPORT OF THE COMMITTEE TO VISIT THE LAW SCHOOL.

To the Board of Overseers of Harvard College: —

The Committee to visit the Law School make the following report: —

A meeting of the Committee appointed to visit the Law School was called for Friday, February 6, at Austin Hall.

The Committee attended lectures on that morning, and afterwards met the Faculty at luncheon; after lunch they had a general informal talk upon matters of interest to the School.

The most pressing need of the School is an enlargement of Austin Hall. The Committee were glad to hear that by the time a proper addition to the building could be completed the net earnings of the School, added to its present surplus, would enable it to meet the cost of construction, if the work were begun without delay. It seems to the Committee that this work should not be postponed, and, so pressing is the need of the addition, that no better use of these funds could be made, even if money would be saved by postponing the work. The immediate erection of the addition is recommended by your Committee.

In attending the lectures, each member of the Committee who was present was surprised to find how well Professor Langdell's system of instruction by select cases lends itself to a large class of 150 or more members. Though the discussion in such a large class is necessarily confined to a few, yet in the lectures where the Committee were present the whole class were evidently following the discussion between the students and the professor with the closest attention and the greatest care.

On talking over this matter with the Faculty, the Committee learned that the students in a course which had been taken by a large number of them had been asked whether they would prefer to have the class divided into two sections and the lecture repeated and given to each section, or to have the lectures given as they are now — to all at one time. The students' answer was that they preferred the larger class; that, while dividing the lecture into two would give an

opportunity for more men to take part in the discussion, they felt that the discussion in the large class where all the best men were present was a better one than could be expected under the other system. The Faculty have, to some extent, adopted the plan of dividing the classes in the first year into more than one section and repeating the lecture to each section, but of not doing this in the second and third years. This gives to all the opportunity of learning how to take part in the discussion and of familiarizing themselves with the system, and it gives to the class later the benefit of the discussion, which is the best that can be brought out by the whole class.

Your Committee, therefore, feel relieved from the difficulties attending even a greater increase in the number of students at the School, which are incident either to one professor repeating his lectures or of having the same lecture delivered to one section by one professor and to another section by another professor.

The question of changing the degree to be given by the College to the graduates of the Law School was informally discussed. The suggestion made was that, as a matter of academic symmetry, the degree should be a doctor's degree in the place of a bachelor's degree, in this respect conforming to the degree given by two of the four graduate schools. If the degree of LL.D. had not been already otherwise appropriated, the change would seem to be unobjectionable and to have the merit of academic propriety. But the adoption of that degree is out of the question. Under these circumstances, the only degree suggested was that of Juris Doctor. The Committee are very doubtful of the advisability of substituting that degree for the present degree of LL.B. The two *L*s have become so fixed by tradition and association with a law school degree that it does not seem wise to abandon them hastily; and there is something in the degree of Juris Doctor so foreign to American universities, and the degree seems to the Committee so top-heavy for one who is nothing more than the graduate of a law school, that they feel the matter should receive a great deal of consideration before it is adopted.

A matter which was discussed by the Committee in the absence of the Faculty was an increase in the salaries of the professors when the accumulation of surplus earnings of the School would permit after the erection of the addition to Austin Hall. It is almost needless for the Committee to say that the legal education given at the Harvard Law School is the best ever given either in England or America. The School has been the pioneer in the present method of instruction; the method has been well carried out, and the School,

as a whole, is to-day the model for law schools throughout the country. The only thing to be seen to in the future is that no other law school shall anticipate ours in making any improvements in the system or in securing better teachers. To make sure of securing the best teachers, and of keeping them after their ability as teachers has become apparent not only to the profession but also to other law schools, the Committee would be glad to see an increase in salaries of such professors when that is feasible, and they are also glad that the net earnings of the School seem to be sufficient for any expenditure of that kind which may be necessary.

CHARLES J. BONAPARTE,
LOUIS D. BRANDEIS,
ROBERT GRANT,
WILLIAM CALEB LORING,
JOHN NOBLE,
HENRY W. PUTNAM,
JOSEPH B. WARNER,
EDMUND WETMORE.

By
WILLIAM CALEB LORING,
Chairman.

April 8, 1903.

CXXVIII.

REPORT OF THE COMMITTEE TO VISIT THE JEFFERSON PHYSICAL LABORATORY AND DEPARTMENT OF PHYSICS.

To the Board of Overseers of Harvard College: —

The undersigned members of the Committee appointed to visit the Jefferson Physical Laboratory and Department of Physics, having attended a duly notified meeting at the laboratory building on Friday, May 8, 1903, have the honor to report as follows: —

More than five hundred students are attending the various courses in Physics during the current academic year. The elementary laboratories occupied by Professor Sabine have been nearly doubled in space during the past year; and the number of students taking his electives has also been doubled. The Committee believe that nowhere else can be found so nearly perfect an organization for the systematic teaching of elementary courses to such large bodies of students with such refined appliances for laboratory work as are to be found in the Jefferson Physical Laboratory; and it is noteworthy that the methods and apparatus for teaching Physics in preparatory schools throughout the country are largely due to the labors of the laboratory Staff.

From year to year, the suggestions of the Committee for the improvement of the laboratory machine-shop have been so generously met by the Corporation that the shop is now, in both labor and equipment, most admirably adapted to its purposes. The chief mechanician, Mr. G. W. Thompson, a skilled worker in metals and very familiar with electrical apparatus, is ably assisted by Mr. W. Connell, an expert carpenter, and Mr. W. E. Oelling, a skilful glass-blower; and Mr. J. Connors, the head janitor, is also a good steam-fitter and is competent to assist in much of the shop work.

With these shop facilities at their service, the Staff, under the impulse imparted by the T. Jefferson Coolidge Fund for Research, have carried on a series of important investigations during the year. The Committee believe that the results of these investigations, to be

mentioned in detail in the report of the Director to the President, afford conclusive proof of the wisdom of Mr. Coolidge's munificent endowment.

For many years, it has been the wish of the Director to so organize the Physical Department that, in case of his sudden disability or death, its work might go on without break. During the current year, the addition to the Staff of Messrs. G. W. Pierce, Theodore Lyman, and H. W. Morse, a body of well-trained young men who are perfectly familiar with the scientific work of the Department, seems to ensure the accomplishment of his wish. These skilled young men have brought new blood to the Laboratory, and, beside engaging in scientific research, have given several courses for the instruction of undergraduate students.

With a strong staff organization, a superb building and equipment, and a substantial endowment, this Department may confidently be expected to win additional distinction for itself, for its generous donors, and for the University under whose fostering care it has attained its present high position in the scientific world.

FRANCIS BLAKE,
ELIHU THOMSON,
FREDERICK P. FISH,
A. LAWRENCE ROTCH
JAMES J. STORROW

MAY 20, 1903.

CXXIX.

REPORT OF THE COMMITTEE ON FRENCH.

To the Board of Overseers of Harvard College: —

The Committee last year recommended that the Department of French should be strengthened by the addition of one or more Frenchmen as teachers; and pointed out that out of some eighteen professors and instructors teaching French in the University, only two were strictly speaking French, and three partly French. The recommendation is renewed with greater urgency now that the recent resignation of M. La Meslée leaves but one full-blooded Frenchman in the Department.

As a practical and inexpensive means of securing such a man, the Department suggests the following: The establishment of a French lectureship, to be bestowed every year by competent judges in Paris, upon some specially promising graduate of the École Normale. This lectureship would be regarded by young Frenchmen as a great prize, and would serve to bring the University into close touch with the latest and best literary thought in France. The lecturer would give regular advanced courses in French and French literature.

The Committee feels, with the Department, that the presence of a brilliant and thoroughly trained young Frenchman would be an inspiration to the other members of the teaching force, a strong attraction for the Department, and an incentive to the students to gain a better practical command of the language. The latter consideration is one which the Visiting Committee considers important and will be the object of a special recommendation later in this report. The ulterior purpose of this lectureship would be the permanent appointment of a talented Frenchman when the occasion presented itself. The interest and coöperation of M. Mabilleau who is in touch with the University of France and the École Normale, is promised, and the Department feels that it would have no difficulty in finding the right kind of man for the lectureship.

The need of giving the students a better colloquial knowledge of French has been felt by the Committee and others; and although there are at present three courses for practical conversation, it has proved to be very difficult to impart that side of the language out of

its own country, and without the facilities for more constant conversation. As a means towards this end, the Committee and the Department recommend the the following plan: —

The establishment at Harvard of three or four fellowships for French students (one such fellowship has been provided at Columbia, and several at Chicago), the holders of these fellowships to teach for two or three hours a week. The three courses in French conversation are divided into eight classes, of which M. Brun conducts a considerable part; but the rest of the teaching must be done by temporary teachers, and it has been difficult to secure that competent instruction which can only be given by well-educated Frenchmen. These courses could be divided among the fellowship holders under the guidance of M. Brun, and the Department would be sure of fresh, intelligent, and scholarly teachers for this important branch of instruction.

The recommendation made last year for a sufficient sum to pay for the publication of dissertations by students of Romance languages, is sufficiently important to be repeated.

In Romance, several works of great importance are lying useless in the archives; and Harvard is almost alone among the important universities of the world in not requiring the printing of Doctors' theses.

Columbia University, in 1902, gave the degree of A.M. to 155 candidates; the degree of Ph.D. to 33. Harvard, in the same year, gave the degree of A.M. to 120; the Ph.D. to 28. Columbia has this year (not counting the professional schools) 609 graduate students; Harvard has 316. This disparity is doubtless due in a large measure to the fact that Columbia publishes its dissertations in attractive form, advertising to the world the scholarly activity of the University, while much of the best work of Harvard men never sees the light.

Respectfully submitted,

J. TEMPLEMAN COOLIDGE, Jr.,
HOWARD GARDINER CUSHING,
CHARLES J. BONAPARTE,
FRANCIS McLENNAN,
JAMES H. HYDE, Jr.,
THOMAS RUSSELL SULLIVAN.

May 25, 1903.

CXXX.

REPORT OF THE COMMITTEE TO VISIT THE LIBRARY.

To the Board of Overseers of Harvard College: —

Under normal conditions the report of this Committee would deal with matters of administration: the organization of the library staff, the policy and methods of purchase, classification, catalogues and other aids to use, the regulation of use, and the service to readers. But the present conditions at the Harvard Library are by no means normal. A collection aggregating a million items — books and pamphlets — is crowded into spaces adequate for the suitable administration of little more than half that number. Twenty years ago the library building was but barely adequate, even for the housing of the material: its facilities for administration and for use were imperfect. Since that date the collection has more than doubled in size, — its constituency, in the undergraduate department alone, has doubled in number; and the methods of instruction have tended towards increased direct use of books by the individual student. But the provisions in space and facilities have remained practically the same. The alterations in Gore Hall in the summer of 1895 modified certain space to new uses, but they added not a foot to the space itself. Large masses of material that should be active in use have been crowded off the shelves and relegated to mere storage in the cellar, or forced out of the building into inaccessible storage elsewhere. The administration is pinched into spaces in the aggregate less than a third of the size requisite for convenient and thorough work, and during certain seasons ill-ventilated; administrative processes which should be in close juxtaposition have had to be scattered in remote alcoves of the stacks themselves. From the ordering of books to the issue of books to the reader, there is not a single process which is not cramped for space and harassed in operation. The cataloguing is rendered unduly laborious by the want of shelving near at hand for the reference books which are its tools, and by the need of traversing public spaces in order to reach the large sections of the collection in Gore Hall; and imperfect from inability to consult the material in storage. The reclassification, the completion of

which is essential to effectual use, the prompt completion of which is essential to the economic placing of new accessions, has had to be suspended altogether. The public catalogues still occupy the narrow space directly opposite the main doorway, where the inquirer must consult them standing, jostled by applicants for books and amid the disturbance of the issue work. And the issue desk, which is also the main reference desk, has still but the dimensions and facilities suited to a village library. For the accommodation of the manuscripts, of the bound newspapers, of the maps, of the art folios, — or for the exhibit of material, — there is no such provision as even the smallest library now deems necessary.

The main reading room, contrived by the alterations in Gore Hall, seats but half the number of readers who should be expected to be making use of it at one time in a University of the size of Harvard, and provides for each reader desk space that is both too shallow and too narrow for convenient study; while the room as a whole, though fairly lighted, has the aspect of makeshift; it lacks the large spaces conducive to meditative study, and is barren of the architectural beauty and dignity which in a great library can exercise a practical influence for good. For seminar study, for which every new college library now provides as a matter of course, there is not merely no present provision, but no possibility of a provision within the present building.

These conditions are urgent beyond description and beyond longer endurance. They impede necessary growth, discourage use, and stifle administration. They are not unique. They have in some degree been experienced by other academic, indeed by most active libraries, at some stage of their career. They are due to growth in the collections which is inevitable, and increase in use which is alike inevitable and creditable. But while in other institutions adequate remedies have been applied, at Harvard they have not been applied; and the conditions there to-day are, so far as your Committee is aware, without parallel in any academic library in this country. They subordinate any questions of administration to the fundamental question of accommodation. They have been made known in various reports of the Librarian, with recommendations growing more urgent from year to year; they were described in detail by him in the *Graduates' Magazine* for December, 1899; and they have been matter of discussion in the several faculties and among the alumni for some years past. In December of 1901 they caused the appointment by the Corporation of a special committee "to consider the future requirements of the College Library." This committee consisted of

Professor E. C. Pickering, the Librarian of the University, and the librarians respectively of the Law School, the Divinity School, and the University Museum.

In March, 1902, this committee submitted to the Corporation a written report, which has been printed, and a copy of which has been before your Visiting Committee. It sets forth the conclusions of the committee on certain questions of policy deemed fundamental — conclusions reached after discussion with members of the Faculty and others at a meeting called for the purpose; it specifies in detail the accommodations requisite for a library of the size, character, and prospects of the Harvard Library; and it estimates the probable cost of a suitable building at $750,000.

Your Committee does not review or comment upon this report, except to state that it seems to have been based upon careful and conscientious deliberation, to be just in its conclusions as to principle, and in its specifications to furnish ample data for sketch plans for a new building, or an enlargement of the present building, if such an enlargement alone be practicable. Your Committee does, however, desire to record its emphatic opinion that the main recommendation of the report should be acted upon at once: this is, that such a set of plans shall be secured through the employment of a competent architect. Other buildings, including Emerson Hall, are in contemplation, whose style and location should be controlled by the style and location of the permanent library building. A new library building can apparently be secured only by gift; the gift of a very large sum. The appeal for such a sum can be effective only if supported by definite plans.

Your Committee notes a suggestion advanced by the President of the University in his annual report and elsewhere as to the possibility in a library such as this of a segregation from the main collection of material not in active use, and the economic storage of this — perhaps in coöperation with other institutions having similar surplusage — in some structure remote from the main library, but accessible for the occasional call. It is not, however, of the opinion that such a modification of present practice need affect the plans of a new or enlarged building for the Library. For the segregation proposed would affect only the *amount* of shelving requisite in the main library at any one time; it would not reduce the amount ultimately necessary, for it would not absolutely stay the growth of the main collection. It would not affect even the character of location of the stack rooms desirable there; and it would not in the slightest degree affect the specifications for the four other elements of the

problem: the general reading rooms, the special reference and study rooms, the provision for special collections, and that for administration.

Your Committee deems the preparation of these plans a duty to the whole University; for the Library — not a mere department — touches the whole. The plans drawn, the appeal for the necessary funds should, we think, go out promptly, forcibly, as the appeal of all the authorities of the University, for a need of general and paramount concern.

For the Committee,

HERBERT PUTNAM, *Chairman.*

May, 1903.

CXXXI.

REPORT OF THE COMMITTEE TO VISIT THE DIVINITY SCHOOL.

To the Board of Overseers of Harvard College: —

The Committee to visit the Divinity School report as follows:

First. As to the financial affairs of the School; that they do not find any separated property account giving book values, on the Harvard College books, of the Divinity Hall and Divinity School Library, the only buildings as they stand on the land now known as the Harvard Divinity School.

We are informed that in the past when a new "treasurer of Harvard College" was appointed and took charge, the Divinity School buildings of that day were taken at some appraised valuation with all the other buildings of Harvard University.

The Treasurer's reports show (page 9, Report 1901–02) results of this year and last: this year's surplus for Divinity School was $9,035.76; last year's was $223.33; the larger sum, however, is due to the fact that The Society for the Promotion of Theological Education paid two sums within one financial year.

There is no separated book account showing the income and expenditures in the case of the buildings and land of the School as apart from others.

The Divinity School funds, including "balance" (page 49, Treasurer's last report), "Scholarship," and "Beneficiary" funds, amount to $547,881.88. These funds, as is well known, are invested, excepting as otherwise ordered by the donors, with all the other "Harvard University" funds, and the Divinity School receives a proportionate part of the average net income arising from the investment of all the Harvard University funds; this year the average so divided amounts to $4\frac{80}{100}$ per cent.

The eight funds for Scholarships and Benefactions amount to		$50,374.44,
and the amount accredited them is $2,407.91.		
(*a*) The other funds amounting to		$497,507.44
were accredited with an income of		$29,347.85
(*b*) Students paid: in rent	$2,970.00	
in fees	4,737.50	7,707.50
(*c*) The Summer School yielded in fees		1,170.00
(*d*) The payments (2) by The Society for the Promotion of Theological Education, which pays *its balances* (after paying beneficiaries) for "the Library of the Divinity School and the Administration of said Library," were reported as		7,987.71
(d^2) Income from "Scholarships and Benefactions"		2,407.91
(*e*) Extra small receipts		64.60
(*f*) Total receipts		$48,685.57

Last year there was no money paid by The Society for Promotion of Theological Education.

(*g*) The payments for Divinity School amounted to . . . $39,159.30

Of these:

(*h*) The Summer School cost $1,585.44, or $415.44 more than the fees.

(*i*) Paid on account alterations in Library building, $2,900; whole cost of alterations, $4,879.35.

(*j*) Electric lighting plant cost $450.85.

(*k*) The largest item, $23,666.67, *salaries for instruction*, does not show the full amount paid professors and others, as the Corporation sometimes pays part of a salary from the Divinity School funds and part from other funds, and the work of some of the teaching force enures to the benefit of other departments. We are unable to make any accurate statement of this division of labor.

The relation of the Divinity School to the University seems to be satisfactory so far as the needs of scholars are concerned, but it may be worth while to consider more carefully the uses made of the funds which were established for Theological Education, although we are aware that eminent legal advice has been taken and that Courts have laid down rules for the direction of the Corporation of Harvard College.

Second. As to the present condition of the two buildings and the land under and surrounding them.

Divinity Hall was dedicated in 1826; the Library building was built in 1887; the buildings and land are, generally speaking, in good condition.

The land in the rear of Divinity Hall, along the edge of "Norton's Woods," should be acquired by Harvard University. The removal

of the old wooden house behind the Hall was made with very slight loss of revenue, and this removal, with the repair of the Batchelder house, greatly improved the whole property. We are told that the Batchelder house, occupied by Professor George F. Moore, does not yield rent to the School.

The Divinity School Chapel needs new flooring and change of wainscotting and pews, new plaster and new paint.

This Chapel is used for four prayer meetings each week, which are now more successful than usual; three are conducted by students and one by a professor; Friday night services with preaching are held here.

It seems to us quite important that this Chapel should be properly repaired and simply decorated; it should be a place of greater dignity than it now possesses, with its poor stucco and badly decorated walls. Here Emerson, Channing, Hedge, James Freeman Clarke, and many others, all superior men, have sought to inspire youths with the deepest sense of the value of devout religious expression, and it is only right that the place should be made as appropriate and as dignified as is possible.

Professor Walter S. Burke, the Inspector of Buildings of Harvard University, estimated the probable cost of adequate repairs at $3,000. Professor Francis G. Peabody thinks the Corporation might help, and that possibly $4,000 should be spent upon this Chapel. Mr. Peabody proposes that this Committee should present some appeal for money to persons interested in this object.

We might add that a Committee of the Minister's Institute (Unitarian Ministers) propose placing a memorial tablet to Rev. Dr. Charles Carroll Everett somewhere upon the Chapel walls.

The Divinity Hall building has forty-two (42) rooms, half of which are furnished by the School funds. There are two bath-rooms; each needs additional ventilation and hot-water apparatus. Another bath-room is needed on the top story.

The paint in this building is not of a cheerful color and should be changed.

The cellar is in good order; there is a janitor in charge of the two buildings, and firemen come from other buildings by day and by night to care for the heating apparatus.

The Library building, in Gothic style, so called, cost $40,000, and is not in keeping with the other buildings, but serves a useful purpose.

The recent addition to it, which cost $4,879.35, has helped the working force of the Library by giving to students one alcove in the

main Library formerly occupied by clerks and copyists; and by providing the much needed space for the work of the Librarian and Secretary, with his assistants.

This addition has created a new space for book stacks at a very low cost when the other uses of the space are considered; it is now possible to move books from the present stack in the basement to this new basement, there to be rearranged, and thus leaves space in the main basement for several thousand more books.

One of the present lecture rooms in the Library building might be used for a reading room.

There are electric lights in the Library end of the building, and it is desirable to have these lights in the lecture rooms.

The two lecture rooms upstairs need repair of plastering and general repairs of woodwork; one of these rooms seats fifty, the other twenty students.

In conclusion we would report that the existence of the Semitic Museum, so very near the Divinity School, with its large room easily seating one hundred and sixty (160) persons, the Library of Semitic Literature, and the two conference rooms, all are of great value to the Divinity School and the Summer School of the Divinity School, but this building is no part of the Divinity School when we are considering our responsibility for material things.

For the Committee,

GEORGE A. GORDON,
Chairman.

May, 1903.

CXXXII.

REPORT OF THE COMMITTEE ON REPORTS AND RESOLUTIONS.

To the Board of Overseers of Harvard College: —

The Committee on Reports and Resolutions respectfully submits that the following Visiting Committees have made reports during the last academic year: —

1. To visit the Bussey Institution.
2. To visit the Museum of Comparative Zoölogy.
3. To visit the Medical and Dental Schools.
4. To visit the Lawrence Scientific School.
5. To visit the Law School.
6. To visit the Jefferson Physical Laboratory and Department of Physics.
7. On French.
8. To visit the Library.
9. To visit the Divinity School.

Under Section 28 of the revised (1902) Rules and By-Laws of the Board of Overseers, the several Visiting Committees are instructed to report in writing at least once in three years. The following committees have apparently failed to meet this requirement: — Two, those on the Classics, and on Botany, have never, so far as appears, made any report. Meanwhile, it is, on the other hand, to be said that the Committee on Classics has been active, and has evinced exceptional interest in the course it is appointed to visit. No reports from four of the committees — those on Government, on Mathematics, on Music, and that on the Semitic Languages — are included in the printed series of the seven years since 1896. It is again, however, to be said that your Committee has reason to suppose that this omission is due to no indifference on the part of those composing the committees in question. The Committee on Government, though a mixed committee, is practically an immediate committee of the Board, and has given attention to all matters referred to it. That on Music has been exceptionally active and interested. No recent published

report appears from the Committee on Composition and Rhetoric: but, in 1897, this committee made a report of unusual length and elaborate character (No. LXXI); and it was therein intimated that no additional or further report on this course of instruction would be desirable for several years. Material for an additional report is, however, now in preparation. The last report from the Committee on Philosophy is dated November, 1896; from that on the Indo-Iranian Languages, June, 1899; from that on Geology and Geography, June, 1900. But the Committee on Philosophy has been exceptionally active in connection with that course, and has energetically furthered its interests. Two committees recently created — those on Engineering, and on Education — have filed no report as yet.

During the year a verbal report was made to the Board by Dr. Folsom, Chairman of the Committee to visit the Museum of Comparative Zoölogy, with a recommendation that the Committee on Reports and Resolutions be requested to consider the advisability of amending the Rules and By-Laws so as to provide for the discontinuance of the Committee to visit the Museum of Comparative Zoölogy, and in place thereof the creation of a Committee to visit the University Museum, and possibly a Committee upon Comparative Zoölogy. This recommendation was, at the meeting of the Board of January 14th last, referred for consideration to the Committee on Reports and Resolutions. Your Committee has since consulted both with the President of the University and with Professor Agassiz of the Museum of Comparative Zoölogy. As a result of so doing, it has reached the conclusion that, while it may be advisable to appoint a new committee as suggested, no benefit would result from abolishing any of the existing committees. It is, therefore, recommended that an additional committee, to be known as the Committee to visit the University Museum, be constituted and added to the present list. Further, that the committee so provided shall consist of the chairman, or some member, from each of the following committees, that on the Museum of Comparative Zoölogy, that on the Peabody Museum, that on Zoölogy, and that on Geology, Mineralogy and Petrography, with such others, not less than two in number, as the Board may from time to time appoint thereon.

Section 28 of the revised Rules and By-Laws provides that the rules or by-laws of the Board can be altered or repealed only by a vote of two-thirds of the members present and voting at a meeting held at least seven days after the meeting at which any alteration or repeal is proposed; and the notice for such meeting shall state that it is proposed to change the Rules and By-Laws. As the proposed Committee to visit

the University Museum would be in addition to those already therein provided, it would constitute an alteration of Section 26 of the By-Laws. A form of vote is, therefore, appended to this report which can, if duly notified in the call therefor, be passed at a subsequent meeting of the Board, in time to secure the insertion of the new committee in the list printed in the forthcoming annual University Catalogue.

The Committee would again emphasize a matter to which attention has been repeatedly called in previous reports, viz. : that the efficiency of every visiting committee depends almost exclusively on its chairman. Moreover, while it is customary for this Board, in reporting lists of committees, to name some member of each committee first, who is *prima facie* its chairman, and will act as such until the committee is organized and some other member of it is made chairman in his place, yet the final selection of its chairman is, as your Committee stated in a Report (No. CXXIII) made in this same connection a year ago, a matter entirely within the province of each committee. Not infrequently the person named first on the committee is unwilling to assume the labor and responsibility of the chairmanship. In such case, his proper course is to call the committee together and explain the situation in which he stands, requesting the committee to designate its own chairman. On the other hand, should the chairman of a committee be absent from the country, or otherwise incapacitated from performing his duties, it would be incumbent upon some member of the committee, presumably the second person named upon it, to call the committee together in order that it might proceed to organize itself. In this connection your Committee desires to call the particular attention of the chairmen of the several committees to the following provision of Section 28 of the Rules and By-Laws of the Board: "Each Committee shall hold early in the academic year at least one meeting with all the Professors and Assistant Professors in the Department or Course of Instruction such Committee is appointed to visit, in order to receive suggestions, inquire into defects and needs, hear complaints, and give encouragement and counsel."

All of which is respectfully submitted; together with the accompanying list of those recommended to compose the several Visiting Committees for the current academic year, and the following form of vote, hereafter to be acted upon by the Board: —

Voted: That, in addition to the committees to visit the various Departments of the University enumerated in Article 2 of Section 26 of the By-Laws, there be appointed a Committee to visit the University Museum;

said committee to consist of the chairman, or some representative member, of the Committee to visit the Museum of Comparative Zoölogy, the Committee to visit the Peabody Museum, the Committee on the Course of Instruction in Zoölogy, and the Committee on the Course in Geology, Mineralogy and Petrography, with such others, not less than two in number, as may from time to time be designated.

By order of the Committee on Reports and Resolutions,

CHARLES F. ADAMS,
Chairman.

COMMITTEES APPOINTED BY THE BOARD OF OVERSEERS.

1904.

ON ELECTIONS.

Moorfield Storey,
George F. Hoar,
James J. Storrow,
Stephen M. Weld,
William Caleb Loring.

ON REPORTS AND RESOLUTIONS.

Charles F. Adams,
Edwin P. Seaver,
William A. Bancroft,
Winslow Warren,
Charles E. Norton,
Francis L. Higginson,
Moses Williams.

ON DEPARTMENTS.

To visit the Divinity School.

George A. Gordon,
Charles F. Dole,
Archibald M. Howe,
James DeNormandie,
William H. Lyon,
Daniel Merriman,
Augustus P. Loring,
Horace S. Sears,
Arthur S. Johnson,
George H. Ellis.

To visit the Law School.

William C. Loring,
Robert Grant,
John Noble,
Edmund Wetmore,
Charles J. Bonaparte,
Louis D. Brandeis,
Joseph B. Warner,
George Putnam.

To visit the Medical and Dental Schools.

Francis L. Higginson,
David W. Cheever,
George B. Shattuck,
Charles F. Folsom,
Alexander Cochrane,
Edmund D. Codman,
Henry F. Sears,
William Sturgis Bigelow,
Henry H. Sprague,
Luther D. Shepard,
Henry Saltonstall Howe,
George F. Fabyan.

To visit the Bussey Institution.

Francis H. Appleton,
Moorfield Storey,
Francis Shaw,
C. Minot Weld,
Lawrence Brooks,
William S. Hall,
Augustin H. Parker,
Nathaniel I. Bowditch,
Carroll Dunham.

To visit the Library.

Herbert Putnam,
George E. Adams,
Charles S. Fairchild,
Francis R. Appleton,
Stephen Salisbury,
Charles C. Smith,
Elihu Chauncey,
Samuel A. Green,
W. Amory Gardner,
Gardiner M. Lane.

To visit the Observatory.

Edwin P. Seaver,
Henry S. Huidekoper,
Charles S. Fairchild,
Simon Newcomb,
Robert Treat Paine,
Charles F. Choate,
Francis H. Peabody,
Charles P. Bowditch,
George I. Alden,
Anna P. Draper (Mrs. Henry Draper),
George R. Agassiz.

To visit the Botanic Garden and Botanical Museum.

William A. Bancroft,
David Pingree,
Nathaniel C. Nash,
Oliver Ames,
Elliot C. Lee,
Mary Lee Ware (Miss),
Edwin F. Atkins,
Arthur F. Estabrook,
Walter Hunnewell,
William Powell Wilson.

To visit the Gray Herbarium.

Francis H. Peabody,
Moses Williams,
George G. Kennedy,
Nathaniel T. Kidder,
Emile F. Williams,
Walter Deane,
George W. Hammond,
George R. White,
John E. Thayer,
Joseph R. Leeson.

To visit the University Museum.

David W. Cheever,
Augustus Hemenway,
Samuel Hill,
Charles F. Folsom,
George P. Gardner,
Rodolphe L. Agassiz.

To visit the Museum of Comparative Zoölogy.

Henry S. Huidekoper,
David W. Cheever,
Charles F. Folsom,
Louis Cabot,
Dudley L. Pickman,
William Brewster.

To visit the Peabody Museum.

Augustus Hemenway,
Charles P. Bowditch,
Henry W. Haynes,
Jesse W. Fewkes,
Clarence J. Blake,
Clarence B. Moore,
Elliot C. Lee.

To visit the Arnold Arboretum.

Stephen M. Weld,
Augustus Hemenway,
Walter Hunnewell,
Charles E. Stratton,
Mary S. Ames (Miss),
Abby A. Bradley (Miss),
Nathan Matthews, Jr.,
John E. Thayer,
Frank G. Webster,
Frederick S. Moseley.

To visit the Lawrence Scientific School.

Francis L. Higginson,
Francis R. Appleton,
Eliot C. Clarke,
Erasmus D. Leavitt,
John Lawrence,
Abbott Lawrence Rotch,
Charles H. Manning,
J. J. Myers,
Philip Stockton.

To visit the Jefferson Physical Laboratory and Department of Physics.

Francis Blake,
James J. Storrow,
T. Jefferson Coolidge,
Elihu Thomson,
Erasmus D. Leavitt,
Frederick P. Fish,
Abbott Lawrence Rotch,
Charles Proteus Steinmetz.

To visit the Chemical Laboratory.

Edward D. Pearce,
Charles F. Folsom,
Wolcott Gibbs,
Alexander Cochrane,
Samuel Cabot,
Edward Mallinckrodt,
William H. Baldwin, Jr.,
Clifford Richardson.

To visit the Stillman Infirmary.

Clarence J. Blake,
David W. Cheever,
Augustus Hemenway,
George B. Shattuck,
Charles F. Folsom,
James A. Stillman,
Philip B. Howard.

ON PHYSICAL TRAINING, ATHLETIC SPORTS, AND SANITARY CONDITION OF ALL BUILDINGS.

William A. Bancroft,
Robert Bacon,
Henry S. Huidekoper,
George W. Weld,
Robert F. Clark,
Edwin Farnham,
Maurice H. Richardson,
William Hooper,
Clarence J. Blake,
Samuel H. Durgin.

ON THE ADMINISTRATION OF THE UNIVERSITY CHAPEL.

Arthur T. Lyman,
William Lawrence,
S. McChord Crothers,
E. Winchester Donald,
George Wigglesworth,
Rockwood Hoar,
Roland W. Boyden.

ON THE TREASURER'S ACCOUNTS.

Moses Williams,
Stephen M. Weld,
Francis R. Appleton,
William C. Endicott,
Robert Winsor,
Gordon Abbott,
Grafton St. L. Abbott,
Adelbert E. Buffum.

FOR THE COLLEGE.

ON GOVERNMENT.

William Lawrence,
Moorfield Storey,
Robert Grant,
David W. Cheever,
William W. Goodwin,
Gardiner M. Lane,
Charles C. Jackson.

FOR THE COURSES OF INSTRUCTION.

ON THE SEMITIC LANGUAGES.

Jacob H. Schiff, Stephen Salisbury, George Wigglesworth, Isidor Straus.

ON INDIC PHILOLOGY.

Edward H. Hall. A. V. Williams Jackson, William Sturgis Bigelow.

ON THE CLASSICS.

Gardiner M. Lane, Babson S. Ladd, Prentiss Cummings,
William W. Goodwin, Henry W. Haynes, W. Amory Gardner.
Edmund Wetmore, James Loeb,

ON ENGLISH LITERATURE.

T. Wentworth Higginson, Robert Grant, Bliss Perry, George W. Cooke.

ON COMPOSITION AND RHETORIC.

Charles F. Adams, George R. Nutter, Edward S. Martin, Hammond Lamont.

ON GERMANIC LANGUAGES AND LITERATURES.

Henry W. Putnam, Godfrey Morse, Heinrich Conried,
Clement S. Houghton, Louis Prang, Frederick P. Fish.

ON FRENCH.

J. Templeman Coolidge, Jr., James H. Hyde, Howard G. Cushing,
Charles J. Bonaparte, Russell Sullivan, Francis McLennan,
Gordon Abbott.

ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY.

George B. Shattuck, J. Randolph Coolidge, James Geddes, Jr.,
Justin H. Smith, William R. Thayer, William B. de las Casas.

ON ANCIENT HISTORY, MEDIAEVAL HISTORY, AND ROMAN LAW.

John Noble, William Everett, Roger F. Sturgis,
Arthur P. Stone.

ON MODERN HISTORY AND INTERNATIONAL LAW.

James F. Rhodes, William F. Wharton, William G. Peckham,
William R. Thayer.

ON POLITICAL ECONOMY.

Arthur T. Lyman, Charles S. Fairchild, Horace E. Deming,
John E. Thayer, John F. Moors.

ON PHILOSOPHY.

George B. Dorr, Joseph Lee, Richard H. Dana,
Richard C. Cabot, Thomas W. Ward, Reginald C. Robbins.

ON EDUCATION.

William Everett, Edwin P. Seaver, John F. Moors,
William Taggart Piper, Grafton D. Cushing.

ON FINE ARTS AND ARCHITECTURE.

Charles E. Norton, R. Clipston Sturgis, Edmund M. Wheelwright,
Robert S. Peabody, Samuel D. Warren, Francis Bartlett.

ON MUSIC.

Arthur Foote, Charles P. Gardiner, Frank E. Peabody,
George L. Osgood.

ON MATHEMATICS.

Seth C. Chandler, Percival Lowell, William Lowell Putnam.

ON ENGINEERING.

James J. Storrow, Charles H. Manning, Frederick P. Fish,
Samuel Hill, Joseph R. Worcester, Edward W. Rice, Jr.,
Edmund A. Stanley Clark, Charles C. Schneider.

ON BOTANY.

George R. Shaw, Nathaniel C. Nash, George G. Kennedy,
Walter Deane, Edward L. Rand.

ON ZOÖLOGY.

David W. Cheever, Samuel Hill, William Brewster.

ON GEOLOGY, MINERALOGY, AND PETROGRAPHY.

Rodolphe L. Agassiz, George P. Gardner, Raphael Pumpelly,
William Sturgis Bigelow, William E. C. Eustis.

ON MINING AND METALLURGY.

John Hays Hammond, R. Alexander F. Penrose, Jr., Edgar C. Felton,
Charles P. Perin, Quincy A. Shaw, Jr., Hennen Jennings,
Frank H. Taylor.

CXXXIII.

REPORT OF THE COMMITTEE ON THE ADMINISTRATION OF THE UNIVERSITY CHAPEL.

To the Board of Overseers of Harvard College: —

The Committee on the Administration of the University Chapel met Professor Peabody and several of the Preachers to the University. Their reports of the service were satisfactory and on the whole encouraging; the various branches of it were carefully considered, and it seems clear that it is of decided value and importance.

The attendance at morning prayers holds good and perhaps with some gain. It is not large — from one to two hundred — but it represents a larger number than any one daily attendance, and perhaps it is not below the average attendance at the present time of young men on church services when living at home. As requested by the Committee in a previous year, the morning hour has been kept clear for the service of morning prayers, though the pressure upon the morning hours is great, both on account of the large number of elective courses and the overwhelming demand of the games for the afternoon hours.

The Preachers to the University take much interest in their meetings with the students at Wadsworth House and consider them of value.

Owing to the absence from Cambridge of many students on Sunday evening who may be in Cambridge in the afternoon, it has been suggested that the Sunday service and sermon should be changed to the afternoon, but no recommendation is made.

The Thursday Vesper services have been very fully attended as usual. They are of a different character from the other services, but they are attended by many students and their continuance is considered desirable.

For the Committee,

ARTHUR T. LYMAN,
Chairman.

September 30, 1903.

CXXXIV.

REPORT OF THE COMMITTEE ON POLITICAL ECONOMY.

To the Board of Overseers of Harvard College: —

The Committee on Political Economy met the professors and instructors.

Professor Taussig, who has been absent for a long time on account of illness, will resume a part of his work in October.

There continues to be a very large attendance in the courses of Economics — 519 in Economics 1, which deals with the general outlines of the subject, and one hundred or more in four other courses on banking, economic history of the United States, problems of labor and industrial organization, and currency legislation with recent experience and theory. These large classes involve the usual difficulties in giving interesting and adequate instruction, but they are gratifying evidences of the interest in this important subject. They make necessary many instructors for proper division of large classes, and consequently large expense.

The list of courses in the Catalogue shows the wide range of the instruction.

The Quarterly Journal of Economics, published by the Department, is well worthy of your attention. In recent numbers Professor Taussig has given an interesting and instructive history of the iron industry in this country, and the sugar problem has been fully treated.

Many other articles on important practical and theoretical questions have appeared in this Journal, which, like all publications of this class, needs the increased subscriptions and financial support to which its merits fully entitle it.

For the Committee,

ARTHUR T. LYMAN,
Chairman.

September 30, 1903.

CXXXV.

REPORT OF THE COMMITTEE TO VISIT THE BOTANIC GARDEN AND BOTANICAL MUSEUM.

To the Board of Overseers of Harvard College: —

The Committee to visit the Botanic Garden and Botanical Museum asks leave to submit the following report.

The Committee met at the lecture-room in the Botanic Garden on Thursday, June 4th, after having made a careful examination of the grounds. During the past year the Garden has been subjected to two great inconveniences, which materially increase the expenses. The first of these came from the unusual condition of the fuel market. The greenhouses have been this year heated by soft coal, the use of which has demanded the employment of extra help both night and day. The second of these grave troubles is the present drought, which necessitates the use of an enormous amount of purchased water and the services of a larger force of laborers. The Director is compelled to keep the Garden up to a certain standard of attractiveness for the college community and for the general public, on an entirely inadequate income. Seven acres of land have to be held under high cultivation upon a pecuniary outlay which would not be considered even for a moment upon a private estate. Therefore, when exigencies, like the present, come, it is absolutely impossible for the Director to avoid a deficit in the budget. It is apparent to all that a larger endowment of the Garden is imperative.

Reports from the Botanical Museums show that all of these collections are in good condition, and that they maintain their attractiveness for the public.

The large expenditures for the current year have been met by additional gifts from friends of the establishment, so that the management will be able to carry on the changes which have already been reported to the Overseers.

For three years the Botanic Garden has superintended a branch garden in Cuba. All the expenses of this branch establishment have been met by a member of the Overseers' Committee who is especially interested in this line of investigation. The Director and Assistant Director of the Garden at Cambridge have made several

visits to the Cuban Garden, where slow but steady progress is being made, and they are hopeful that it will prove a successful adjunct to the other botanical resources of the University.

The Committee notes with much satisfaction the skilful management of Dr. Goodale, the Director, who, with unpromising soil, and with slender financial resources, has accomplished much. His zeal and learning are both great, but the immediate need of the Botanic Garden is an adequate endowment.

The Committee hopes such an endowment may be found.

For the Committee,

WM. A. BANCROFT,
Chairman.

JUNE 10, 1903.

CXXXVI.

REPORT OF THE COMMITTEE ON ENGLISH LITERATURE.

To the Board of Overseers of Harvard College: —

In making my final report as Chairman of this Sub-Committee — for, as I have already notified the Chairman of the Committee on Reports and Resolutions, it is my purpose to resign by reason of age — I propose to go little into detail, but to confine myself to a few general suggestions.

I have made some visits to classes during the year; and these have only confirmed the very favorable opinion heretofore expressed of the general condition of the Department. During a connection of some years, I have seen steady progress in working out what is surely the highest result, that of training a department of highly educated teachers in a manner to secure individual development and mutual freedom of thought and action among them. While peculiarly loyal to their accomplished chief, Professor Hill, it has been recognized among them that every man worthy to teach at Harvard must have character enough to have opinions and even methods of his own. Hence it happens, sometimes, as I have personally known, that students have quoted, with surprise, literary opinions, quite antagonistic, proceeding from their different instructors, and have only gradually acknowledged that this was by far the best system, and that pupils, like teachers, must learn to think for themselves. I am led to believe, from what I hear, that this high development is by no means confined to the English Literature Department; but I can cordially testify to it as existing there.

It may not be sufficiently recognized, however, that this condition of things also perceptibly increases the responsibilities of any visiting committee. It is impossible now to test the whole body of teachers, even in a single Department, by a few occasional visits; in fact, it becomes necessary to multiply such visits very much, in order to give to judgments any real value. Herein our position varies much from that of the English universities, where, as I am informed, a good deal of examining work is systematically done by graduates now wholly detached from the university, or sometimes even by non-graduate experts. This difference is again partly due,

I suspect, to the fact that men entering professions in England wait much longer for practice than is the case in this country, where our eagerness to enter on any practical pursuit leaves no available leisure class among the younger graduates.

This makes it far easier in England than here, I have been told, to obtain the services of educated men at low prices for purposes of teaching, examination, etc., insomuch that at some colleges in Oxford and Cambridge especial pains are taken to get examiners entirely distinct from the regular teachers, to secure impartiality, a method rarely adopted in American institutions, from the fact that few highly educated examiners are here to be obtained outside. I do not know what sort of compensation is given to Englishmen so employed; but long observation has convinced me that some special compensation is very desirable, if only as a recognition of service. The payment of some small visiting fee to public school committees, for instance, was very general until the salaried office of school superintendent was introduced; and it is still the practice, I think, where superintendency does not exist. Even among monied institutions in the business world, I believe, the practice often exists of paying fees to directors for attendance at meetings, though these men may be personally wealthy. It is not in these cases that these men care for the money so much, perhaps, as that the recognition of service gratifies them. Would it not be possible, by reducing the membership of each visiting committee to one or two persons each, to secure more actual service in the way of paid inspection. Or could there not be more distinct compensation for this picked body in the form of honor — as, for instance, by including such persons among those entitled to obtain tickets for the Symphony Concerts at the first (private) distributions, or on other occasions where those recognized as "university men" have special advantages. These are mere suggestions as to detail. The main points which I would venture to suggest for consideration to the Board may be summed up as follows: —

I. Might it not be for the interest of the University to reconstitute the sub-committees on "Courses of Instruction" by limiting the number of each to one person, or at most two, with the understanding that each committee is hereafter to be a working body and not a mere list of names?

II. Might it not be desirable to attach to this service some suitable pecuniary compensation, like that given to school committeemen where there is no salaried superintendent, or that paid to directors in some financial institutions?

III. Or could not some special privilege be assigned in return for such service, so as to designate it as an honor, even apart from any pecuniary consideration?

Lest I be thought to have taken too great a liberty in these suggestions, I will venture to remind the Board that I am by far the senior among those now serving on the examining committees, having been appointed on the Mathematical Committee, at the suggestion of Professor Benjamin Peirce, in 1842, the year after I left College, before I was twenty years old, and having served on different subcommittees, at varying intervals, ever since.

THOMAS WENTWORTH HIGGINSON.

December 2, 1903.

CXXXVII.

REPORT OF THE COMMITTEE ON FINE ARTS AND ARCHITECTURE.

To the Board of Overseers of Harvard College: —

The instruction in the Division of Fine Arts is, in the judgment of your Committee, carried on with efficiency and excellent results. The benefits resulting to the Department of Architecture from the erection and endowment of Nelson Robinson Jr. Hall are hardly to be overestimated, and we wish once more to express to Mr. and Mrs. Robinson the gratitude of this Committee for so noble and useful a memorial gift. It is greatly to be desired that students in the other branches of the Fine Arts should be provided with equally good facilities for their work, and, further, that for the larger classes the number of trained assistants should be increased.

In the Report of the Committee on Architecture (now merged with the Committee on Fine Arts), presented early in 1902 to the Overseers, the importance of coöperation between the Departments of Architecture at Harvard and at the Institute of Technology was clearly presented. Independent of each other as they are at present, there is a lamentable waste of power and of means in the duplication of instruction and of material.

Your present Committee desires to urge the same argument, and to extend it to embrace the whole Division of the Fine Arts, and it would strongly advise a coöperation whereby the students of either institution may have the advantage of any special opportunities offered by the other.

Your Committee recommends the establishment at Harvard of a course, or a half-course, in Architecture, designed to give to the great body of undergraduates who have no intention of pursuing the study, an elementary knowledge of the principles and history of an art of which the practical importance is so great.

It is much to be desired that the Professorship of the History of the Fine Arts should be filled. Instruction in this branch of History is essential in the scheme of University studies as a complement to the instruction in its other branches and also because of the intimate relation of the Fine Arts to Literature, and of their similar importance

as among the chief modes of expression of individual and national thought and life.

In regard to an important matter which has been more than once brought to the attention of the Overseers, relating to the buildings of the University, a brief recapitulation of the action of the Board, and of its result, seems desirable. At the meeting of the Board on April 10, 1901, the following resolution, offered at the instance of this Committee, was adopted : —

Resolved : That the Board of Overseers requests the President and Fellows of Harvard College to appoint a Standing Committee of five members, of whom two at least shall be members of this Board and one a member of the Faculty of the College, to which shall be submitted all plans and designs of permanent buildings for the University previous to their adoption, together with their proposed sites, to the end that the Committee may advise in respect to them.

After waiting a year for a response to the request of this vote, and no notice having been taken of it, the Overseers on June 11, 1902, adopted the following vote : —

Resolved : That the President and Fellows be requested to take action in accordance with the vote of April 10, 1901, or, if not, to inform the Overseers by a written communication of their reasons for not doing so.

The reply to this vote was received at the meeting of the Board on October 15, 1902, and was as follows : —

The President and Fellows in reply to the communications from the Board of Overseers of April 10, 1901, and June 11, 1902, find themselves obliged to say, in view of their experience in placing and erecting buildings, that the sort of joint committee proposed in the vote of April 10, 1901, is in their judgment impracticable.

This communication was laid upon the table, where it still remains.

Although this reply disposes of the original proposition adopted by the Overseers, your Committee does not regard the action of the Corporation as prohibitive of a further attempt to reach what seems to its members an object of essential importance in respect to the building-undertakings of the University. To this end, your Committee ventures to make two recommendations : first, that the Corporation be requested to appoint a standing, unsalaried Committee of consulting Architects, to whom the designs of all new buildings for the University shall be submitted, in order that they may report thereon before the design is finally adopted for execution. Secondly,

that, in case of any new building for a special Department of the University, the President and Fellows shall request of the members of the Department a written report, for the guidance of the architect, as to the needs to be supplied by the proposed structure.

Your Committee makes this second recommendation with the more confidence, because the Corporation has already partially adopted, to great advantage, the practice recommended, in the erection of Pierce Hall, and is understood to have done so as a preliminary to the laying out of the design of the proposed Emerson Hall. Your Committee urges that this practice be established by the Corporation as a rule.

CHARLES ELIOT NORTON, *Chairman.*
ROBERT S. PEABODY,
R. CLIPSTON STURGIS,
SAMUEL D. WARREN,
EDMUND M. WHEELWRIGHT,
FRANCIS BARTLETT.

December 2, 1903.

The Undersigned, in his individual capacity, begs leave to submit the following Supplementary Report: —

While cordially agreeing in what the Committee has said in regard to the benefits accruing to the University from the building and endowment of Nelson Robinson Jr. Hall, the undersigned regards it as serious matter of regret that a building intended for the accommodation of a School of Architecture should not itself be a model of good architectural design, and of harmonious relation to the buildings to which it stands in close neighborhood. The opportunity was a noble one, and such as might well inspire an architect through the thought of the influence which his work would exert on successive generations of the young students of his art. Advantage has not been taken of this stimulating opportunity. The building has neither beauty nor impressiveness, and both without and within is open to legitimate criticism in the disregard which it here and there exhibits of established principles of good architecture. Moreover, in design, in material, and in color it is out of harmony with Sever Hall, to which it stands in close and subordinate relation.

The manifest failure of this building to afford an example of Architecture as a Fine Art, is but one of the latest in a long series of failures in the buildings of the University during the past fifty

UNIVERSITY OF ILLINOIS
LIBRARY

years. Everyone who recognizes the importance of fine architecture as an influence in the education of youth, through its power to quicken the poetic sensibilities and imagination, and to deepen the sentiment which should invest school, college, and university with an abiding charm in the hearts of their students, must regret the loss of the opportunity to enhance the dignity and beauty of Harvard College by means of the character and arrangement of the buildings erected during the past two generations.

The difficulties with which the Corporation has had to deal in the matter of building, and the principles by which its action has been guided are obvious. It is plain that a body composed after the manner of the Corporation cannot be expected to consist of experts in the arts. And, burdened as it is with an enormous and constantly increasing weight and variety of the most important duties, it cannot be expected to have the time to give to the due consideration of the proper ordering of the numerous edifices the construction of which it is obliged to undertake. It is inevitable that the Corporation should relieve itself from responsibility by entrusting the work to the hands of architects esteemed competent, and of good repute with the community. But the practice of architecture in this country during the last and in the present generation has not been in a satisfactory condition. Our leading architects have been overworked, with the result that by many of them architecture has been practised rather as a business than an art. They have had little leisure for that mature deliberation which is requisite for the production of a building appropriate and well adapted to its object, and at least unobjectionable as an architectural design.

The buildings erected for the University in recent years by some of the most eminent architects in the country afford evidence of their failure to discharge satisfactorily the responsibility imposed on them. Sever Hall, which has excellence as a mass, possesses little other merit. Its interior arrangement was sacrificed to its exterior appearance, and so little consideration was given to it that it is in no respect well suited to its purpose, while in regard to the essential requisites of safety, ventilation, lighting and acoustic properties, it is wretchedly defective. The unfitness of the Fogg Museum for its purpose is generally recognized. Had it been intended as an example of what such a building should not be, it could hardly be better fitted for the purpose.

The fence lately erected around the greater and the most conspicuous portion of the College Yard affords another illustration of the unfortunate result of the method of the Corporation in dele-

gating its responsibility and authority to an architect of high popular repute, and in permitting him to carry out his design with insufficient consideration and without submitting it to discussion and intelligent criticism, and in part against the protest of those whose position and judgment gave them a right to be listened to. The opportunity was exceptional for adding to the beauty and dignity of the Yard, by the erection of an enclosure which should be of such character as should suggest the seclusion becoming to a place of study, while providing for ample vistas of the space within its circuit, and affording suitable positions for memorial erections and tablets of various description. The fence actually constructed is of a kind perhaps appropriate enough in its greater part for the enclosure of ornamental grounds, but lacks the character which should distinguish the wall of a scholastic institution. The number of gates upon its most exposed side is excessive, breaking its line into feeble divisions. Moreover, not one of the gates is of conspicuous merit as a work of art, while as a whole they are deficient in the symmetry of design which might group them in a comprehensive and impressive architectural unity. They have not even the inferior merit of picturesque effect.

The permanent injury inflicted upon the University by such constructions as these which we have taken as illustrations, as well as by others of a similar nature which might be added to them, is hardly to be overestimated.

The system maintained by the Corporation practically excludes any effective criticism of plans and designs previous to their execution. It is hardly possible to believe that better results would not have been achieved had the plans and designs been submitted to the judgment of competent persons, and had due weight been given to their opinion. In respect to two flagrant instances of failure which I have mentioned, it is certain that this would have been the case. Before the erection of the Fogg Museum, the drawings for it were inspected by the members of the Department of Fine Arts, and by several of the most eminent of the architects in Boston. The essential defects of the designs were clearly pointed out, and a communication stating the objections to the building and its unfitness for its purpose and for the needs of the Department was submitted to the committee of the Corporation which had the work in charge. It was practically unheeded, and against the strong protest of the Department whose interests were most intimately concerned, a building unfit for its purpose in every essential respect was forced upon it.

So too, before the erection of the fence, the matter was carefully and thoroughly discussed by the Department of Fine Arts, by the Harvard Memorial Society, and by architects in consultation with them. Their interest in the matter and their consideration of it were known to the Corporation, but no action was taken to secure consultation between their representatives and the architect to whom the work was confided, and the unofficial conferences with him of certain of their members had little effect. His plans in detail were not submitted even for inspection.

An evil of not less magnitude than that involved in the defects of the buildings is manifest in the selection of their sites, and the general disregard of their mutual relations. Had a judicious scheme for the laying out of the grounds of the University, and for the position of the buildings upon them, been adopted thirty years ago, the aspect of the University to-day would be far more impressive, and far more representative of its importance, than is actually the case. Many difficulties have stood in the way of ideal arrangements, but in spite of them much might have been done in the grouping of the various structures which would have enhanced the outward beauty and dignity of the University. As it is, the buildings have been scattered in such wise that they do not combine for an impressive general effect, and in several instances they have been so placed as to interfere injuriously one with another.

The speed with which the plans of some of the recent buildings of the University have been prepared, and with which their erection has been carried on, has been more in accord with the eager haste of the commercial spirit than with the wise deliberation with which such work should be conducted by an institution of secular growth and duration. A few years more or less are of trifling consequence in the life of a University which looks forward to a future of indefinite extension. It should build, so far as human foresight can provide, not less for a distant posterity than for the immediate generation. It should not be driven by any consideration of brief interest to provide for a present need by a faulty structure which is likely to become more and more unsatisfactory with the progress of years.

There is, perhaps, not a single University building of the last fifty years, from the Museum of Comparative Zoölogy to the Memorial Hall, and from that to the Harvard Union, which, either by its beauty or by the peculiar fitness of its adaptation to its object, is likely to be held in admiration one or two generations hence. With all the resources of intelligence and of wealth on which Harvard

University may rightfully expect to draw in the course of years, there might be reason for hope that, if a proper system in regard to building be established and pursued, the outward form and aspect of the University would in time give evidence of the wisdom of its rulers, no less than of the gratitude and reverence of those who owe to it more than they can ever repay.

The suggestion in regard to such a system made by your Committee is commended to the Board for such action upon it as may seem fitting.

C. E. NORTON.

December, 1903.

CXXXVIII.

REPORT OF THE COMMITTEE ON MODERN HISTORY AND INTERNATIONAL LAW.

To the Board of Overseers of Harvard College: —

Your Committee have followed their plan of two years ago. We have visited some of the courses, but our data are mainly derived from two long conferences with the gentlemen of the Department. One of them was had last May, and the other in November of this year. A summer's reflection on the subjects discussed at the first meeting was fruitful for both the professors and the Committee. In the autumn, after the opening of the University, the Department took into consideration their needs, and a number of the instructors prepared cogent statements which served as topics for discussion at our second joint meeting. The endeavor of your Committee was to consider the reasoning of the professors from the point of view of men of the outside world.

Since our report of 1901 the growth of the Department has been remarkable. The number of students has increased from about 1,600 to 2,150; those taking Government were then 600 and now are 950. There is a general agreement that the courses in Government, on account of their interest and importance, should be augmented. The graduate of the University will be a citizen as well as a professional or business man, and he ought to be able to obtain much from the lectures and books that will be helpful in the exercise of that duty. Should he go into politics, he ought to have acquired here the basic knowledge necessary to his chosen career. We are satisfied that the quality of the instruction is excellent, but more of it is needed. To undergraduates more subjects should be taught, and advanced instruction should also be given. Into details here we shall not enter; they can best be furnished by the Department.

In the History instruction proper there are gaps. We are informed that beyond the introductory courses students do not have an opportunity to study the rise of Prussia and Frederick the Great; the French Revolution; the Napoleonic Wars; the liberation of Italy; the Franco-Prussian War and its dual results, the creation of the

modern German Empire on the one hand, and the Commune and the development of the French Republic on the other; the growth of colonial empires; — in a word, the Nineteenth Century in Europe is a sealed book. We tried to emphasize in our last report the importance of the study of History as general culture. This we would iterate, adding that there is little better mental furniture for the professional man or man of business and society than a knowledge of the history of Europe from the pregnant date of 1789.

We wish to point out the fact that in our Department of Modern History and International Law (in connection with other courses of the University which will occur readily to any one) we have a school of Journalism. The future leader writers and important correspondents of our newspapers should aim at accuracy, because, in addition to the moral consideration, it will, unless we mistake the trend of intelligent opinion, prove to be a quality possessing a money value. It is our conviction that the study of History in Harvard University tends to accurate thinking and exact statement, — qualities useful not only to the journalist but to men in every profession and business. Moreover, a comprehensive and precise knowledge of the history of the last one hundred and fifteen years, European as well as American, is needed by him who shall aspire to guide public opinion in the editorial or news columns of our best newspapers.

The Department believe that they need more assistants, and so far as may be they would like them from the class of professional teachers or intending teachers. We submit this with our endorsement.

We observe a large use of books by students in the upper classes and the Graduate School. This is gratifying; it shows that the students have learned to get at facts of their own motion. If this be due in some degree to their intercourse with the assistants, it gives additional weight to that feature of the instruction and to the desire expressed by the Department. It is an axiom that historical work implies the reading of many books. If, for example, a student has mastered Gibbon or Gardiner by reading his notes as well as his text, and in case of doubt has gone to the original authorities themselves, if perchance he has formed an estimate of Strafford or of Cromwell, he has begun a bookish study of human nature of great worth both to the man of affairs and to the scholar. For the proper study of man which the scholastic part of a university or the library can furnish, nothing, in our judgment, next to communion with the great poets, equals a grasp of excellent general histories with a recourse to the sources.

The work of the Department would undoubtedly be promoted had the members of it a headquarters, which could be used for meetings, for conferences with students, and in a variety of other useful ways. Better facilities in connection with the library — the laboratory of history — would be helpful. From ignorance of the buildings and their various uses your Committee does not deem it proper to do more than state that this need has been presented and a remedy suggested.

While as its paramount object the University should aim to fit young men for their life callings, it should also be a retreat for scholars and a place for the production of books and treatises which shall add something to the stock of human knowledge. It is almost as true now as it was when Motley said it, "European history for Americans has to be almost entirely rewritten." There cannot be too much scientific treatment of American history. "The harvest is plenteous, the laborers are few." For a variety of reasons the larger part of the histories must emanate from the workers in the universities. To write a history demands steady labor and single-minded devotion. What Thackeray with some exaggeration said of Macaulay illustrates the requirements: "He reads twenty books to write a sentence; he travels a hundred miles to write a line of description." For this, leisure is needed; how may the hard-worked professor obtain the necessary time, in addition to the very liberal vacations which are granted him by the governing boards of the University? With great diffidence, and with the confession of our ignorance of the immense and varied administrative work of a great University, we venture a suggestion. In a large community of teachers there will be men of business and men to whom study, quiet meditation, and literary production are the chiefest joy. Is it possible to have the administrative work done by those most apt for it, saving the time of those who incline to the fruitful labors of the spirit? "A good book, the precious life blood of a master spirit," is a glory of a university, attracting students to sit at the feet of the author, and impressing men of the world and of fortune that their country, in emulation of Europe, is making contributions to knowledge. What a suggestion there is in the life and death of Mommsen, — a professor at the University of Berlin, mourned by prince and commoner, by the learned and unlearned of the Empire, and receiving tributes from the whole civilized world!

To sum up: we believe that the History teaching in Harvard University tends to make accurate thinkers and exact writers and speakers; that, in addition to the disciplinary result, it tends to the

acquirement of intelligence. From the number of students, its record in the past and promise for the future, we believe that if it be possible to comply with the expressed needs of the Department, such compliance will redound to the credit and the prosperity of the University.

Respectfully submitted,

JAMES FORD RHODES,
WILLIAM F. WHARTON,
WILLIAM G. PECKHAM,
WILLIAM R. THAYER.

December 2, 1903.

CXXXIX.

REPORT OF THE COMMITTEE ON ZOÖLOGY.

To the Board of Overseers of Harvard College: —

A visit to the Department of Zoölogy shows great advance there since two years ago.

On the first floor of the North Corner Piece of the Museum are a large lecture room and three laboratories; on the fourth floor, eight rooms; on the fifth floor, two rooms; in the basement, a carpenter's shop, a dark room, a light room, an aquarium, a vivarium room, and a cold hatching room. The Zoölogical Department also has the use of a large basement in Lawrence Hall for a vivarium. It will thus appear that there is now ample room for laboratories and for teaching.

There are desks and a good light for twenty research students, *i. e.*, for original study. The personnel of the teaching corps is unchanged, but Dr. Castle has been promoted to be an Assistant Professor.

One of the most gratifying improvements is the new aquarium, of four large tanks, two salt and two fresh water. The pumping of the water and its aeration are done by compressed air, the air pump being run by an electric motor. The arrangements seem simple and efficient. This aquarium, with numerous jars, aerated and fed by syphons, gives ample opportunity for the study of aquatic forms of life. Fish eggs are slowly hatched in the cold room, under the front steps.

The experiment of the inbreeding of guinea pigs has terminated in the practical extinction of the family. Flies are now in the thirty-fifth generation of inbreeding. The tenth generation begins to be partly sterile, and the thirty-fifth still less productive. Ants are being studied in the breeding of workers, queens, etc. The breeding by crossing of smooth and rough coats, and of colors, in rabbits and guinea pigs is being very largely tried in the new vivarium — an exact law is being defined — and Asst. Professor Castle has just published an essay on heredity and the laws of Galton and Mendel.

Among the more pleasing incidents is the Memorial Volume given Professor Mark, after twenty-five years of teaching, by former pupils. It contains twenty-five essays, illustrated; written by his pupils, of whom, widely scattered, most are teaching in the United States and one in Japan.

DAVID W. CHEEVER.

JANUARY 13, 1904.

CXL.

REPORT OF THE COMMITTEE TO VISIT THE MEDICAL AND DENTAL SCHOOLS.

To the Board of Overseers of Harvard College: —

Your Committee visited the Medical School on March 3, 1904.

The Dean of the Medical Faculty had no changes to recommend. The only alteration in the present building is a new fan and system of ventilation, which is now in use, and is necessitated by the erection of high buildings nearby. No other alterations are desirable. Although dark and inconvenient and overcrowded, the present building suffices, until the new Medical School is ready.

The shrinkage in numbers of the classes, due to the requiring of an A.B. degree, renders the old building more endurable for a couple of years than it would otherwise be. It is a happy omen that an increase of students is taking place in the Summer Courses, and in the Post-Graduate School; as high, in the latter, as sixty-four per centum, and with double the amount of fees. This is an endorsement of the superior laboratory and scientific instruction of the School. Moreover, this advance in laboratory research in both medicine and surgery is farther evidenced by the increasing and numerous publications of this School — not only in furnishing many of its own text-books, but in varied and valuable monographs and experiments on special subjects.

The School has 473 students; there is a deficiency this year of $13,868. The salaries of the lower grade of instructors have been reduced twenty per centum. The fee for the fourth year has been raised to $200 as in the three previous years, but the $30 fee for graduation has been abolished. This makes the fourth year cost $170 instead of $100. The main consideration, after all, is to make this fourth year a complete year, equal to the others, but elective as to studies.

The pursuance of the "block system," so called, of instruction in the earlier years, and the appointment of a health committee for students are other noteworthy changes.

Five new buildings are promised for September, 1905, but may over-run that time.

There being ample land, and a somewhat distant site, the need of a dormitory and a restaurant will soon be urgent.

The Chairman of your Committee, looking back fifty years when he entered this Medical School, may be allowed a brief digression on the changes in medical education. Then Anatomy by *dissection*, *inorganic* Chemistry (mostly), and *morbid anatomy* in the museum were the only subjects approaching laboratory instruction. All else was lectures and books, with a modicum of hospital visits. Now we find the Medical School Building a hive of research. The dissecting room and the museum are there still, but the whole edifice is crammed with laboratories and research rooms.

Let us enumerate them: Hygiene, Physiology, Organic and Physiological Chemistry, Pharmacology and Applied Therapeutics, Embryology and Histology, Bacteriology, Pathology, Surgical Pathology. *Eight laboratories*, a basement for animals, storage for material in anatomy.

In contrast, three lecture rooms, used alternately for lectures and recitations.

What a difference!

Six Professors, besides the Professor of Anatomy, giving their entire lives to scientific research and teaching.

Time is not at the disposal of this Committee to examine and report on the vast amount of Clinical Instruction given in the hospitals, although this consumes all the forenoons of the advanced classes.

It is rather the purpose of your Committee to report on the condition of the laboratories, and the wants of the laboratory teachers, in the College buildings.

Professor Dwight has been making a series of preparations in the variations of the human skeleton, which rivals, if it does not excel, any in existence. His plates, papier-maché models, corroded vascular preparations, and frozen sections, and also the sections of all the bones are extremely interesting and valuable.

More Anatomical Material; differentiation of classes, whether pursuing medicine or dentistry; large dissecting rooms, more light for private research rooms, are the pronounced needs of this department.

Professor Harrington, in limited quarters, is doing much work in Hygiene as to the composition and purity of water, milk, air, foods, etc. Just now he is experimenting in asepsis.

Professor Minot showed the Committee most complete sections of a four weeks' embryo; many drawings done by his Assistants; wax models, built up piece by piece from minute objects, and thus enlarged for demonstration. He has now a very large collection of

sections and preparations, and the work in Embryology and Histology is steadily pursued.

Much time is wasted in drudgery which could be devoted to original work, could money be furnished. Professor Minot needs an artist, at $1200 a year.

Professors Bowditch, Porter, and Cannon, in Physiology, have rooms larger than, and superior to, the rest of the laboratories. The work in animal and other experimentation is carried out here on a scale to afford each student an opportunity for personal observation.

There is a mechanical work-shop here, with five men employed in making apparatus of precision. American turning lathes and other American machinery is employed. The result is a product of scientific test instruments so superior and so cheap as to be eagerly sought for all over the world. Japan, Australia, and Spain were about to take the samples we saw. It is evident that Dr. Bowditch could fill a large building with his own department.

Professor Wood, who kindly piloted your Committee over the building, showed us his Department of Chemistry; this has a large room and a light one, much to its advantage.

In Pathology, Professors Councilman and Mallory, whose researches and discoveries in small-pox and scarlet fever will be fresh in the minds of the medical profession, have fairly good rooms in the Sears' laboratory building. The former says he prefers an endowment for pursuing research to any or all new buildings; he would rather stay in his cramped quarters if he could have a liberal pecuniary grant to pursue science. It must be remembered, however, that Dr. Councilman also uses a superb pathological plant provided by the Trustees at the Boston City Hospital. But all the laboratory men want money — not for themselves, but for study. This need was warmly seconded by Professor Pfaff, in his department.

Dr. Councilman wants $200 at this moment to complete an important work. He also suggests that we should have a department for investigating and teaching tropical diseases. The West Indies are close at hand; they have, he asserts, all the tropical diseases. It ought to be possible to pursue research there in connection with facilities which could be afforded, with little or no expense, by the Fruit Company steamers. Investigators could go, bottles of infections and bacteria could be sent, and a school of tropical diseases be thus established here.

The Department of Bacteriology, under Professor Ernst, was very interesting. He showed the Committee contrasted cultures of human and bovine tuberculosis, and wonderful photographs of the same.

He needs, for the use of his and other departments, a Carmann Projector, costing $500.

Dr. Ernst showed the Committee, with just pride, the Journal of Medical Research, which he has developed in seven years from a four-page pamphlet to two bulky volumes each year, all the subject matter being original studies.

The Laboratory of Pharmacology and Experimental Therapeutics, under Professor Pfaff and Instructor Tyrode, is too limited in its quarters and badly lighted. Fortunately these investigations can be pursued in the hospitals and in general practice.

Surgical Pathology has a laboratory under Instructor Nichols. It is here and in the hospitals that investigations on cancer and on tumors are being pursued. The basement is occupied by the vivaria, and the attic story by the dissecting room. Every inch of space is utilized, and twenty years has over-filled and outgrown this Medical School Building.

More room, more light, endowment — these are the crying needs. The superb new structures being erected will supply the former; but the necessity of a liberal fund to support this vital work of studying and imparting knowledge to relieve suffering, and to prolong life, was never more apparent.

The Report of the Sub-committee to visit the Dental School is subjoined.

DAVID W. CHEEVER,
GEORGE B. SHATTUCK,
CHARLES F. FOLSOM,
ALEXANDER COCHRANE,
EDMUND D. CODMAN,
HENRY H. SPRAGUE,
LUTHER D. SHEPARD,
HENRY S. HOWE,
GEORGE F. FABYAN.

The Dental School was visited by a sub-committee on Tuesday, March 1.

The high standard of work of the School, established by Harvard University in 1867, has been not only maintained, but it has been raised from year to year so that its influence has extended over the whole country, and to a considerable degree in Europe, in establishing the education of dentists on a high plane.

With the entrance examinations now the same as for Harvard College and the Scientific School, and with the first year's studies

devoted wholly to anatomy, including dissections, physiology, histology, embryology, and physiological, pathological and dental chemistry, the three years' work and annual examinations required for a degree in the Dental School satisfy all reasonable demands for the present.

With these higher requirements it is probable that the number of students may at first decrease. The success and the high positions taken by the 474 graduates who have been sent out from the Dental School with the degree of D.M.D. attest the value of our methods and the public estimate of our standards.

The Dental School has become also the centre of a great charity as well as a training school for the highest professional standing in its graduates. During the year 1902, there were 7,789 patients treated for diseases of the mouth, teeth, and gums, involving some 20,000 operations and several hundred mechanical devices; and it is rather an interesting fact that 48 persons with fractures of the jaw were cared for as out-patients, many of them having been sent from the hospitals where such cases were formerly treated.

This great industry requires the services of ninety operators; and the narrow finances of the School make it necessary to delegate much of the mechanical instruction to the students. The advice and professional assistance given to the poor are free except that a small charge is made when expensive materials are used.

The building in use for the Dental School is the old Medical School, lately purchased by the Massachusetts General Hospital. It is old, dilapidated and entirely inadequate for its present purpose; and it may, at short notice, be required by the hospital for its own use.

The maintenance of the highest professional standards in teaching at the Dental School, with comparatively a small number of students and at exceedingly moderate expense, has been made possible partly because of the largely gratuitous services of the Alumni as Instructors and partly because a great part of the teaching for the first year has been done by the Medical School with its own first-year students — an arrangement which is only partially satisfactory to either class of students.

In spite of these advantages, the deficit in the Dental School, from excess of expenses over income, for the past year, with much greater frugality and economy than is suitable, was only $2,124.80, or materially less than for the previous year.

An entirely new department in the charitable work of the School is the appointment of one of its graduates to assume the care of the

teeth of the patients at the Hospital of the Good Samaritan of this city. This and the free dental service which the School maintains at the homes of the sick poor, for the relief of those who are unable to attend the clinics of the Infirmary, involves very little additional expense.

Well-equipped laboratories for research and experiment, properly appointed operating rooms, and better opportunities for managing this vast and most-needed charity are urgently demanded — $300,000 for land and buildings and $200,000 for endowment.

The Dental School will soon be obliged to find new quarters, and it is most appropriate that these quarters should be in a new building on the land recently purchased for the Medical School.

About ten years ago a movement was made to raise money for a new building. As a result of these efforts, together with what the School has saved from its income, a sum of about $50,000 is now on hand — only $450,000 more is needed, and the need for it is very great.

CXLI.

REPORT OF THE COMMITTEE TO VISIT THE UNIVERSITY MUSEUM.

To the Board of Overseers of Harvard College: —

The Committee met Mr. Alexander Agassiz on April 16th, at the Museum. Messrs. Folsom, Hemenway, R. L. Agassiz, and Cheever were present. At a subsequent hour Messrs. Folsom, Pickman, and Cheever visited the Museum of Comparative Zoölogy with Dr. Woodworth. The Museum Committee were much impressed by the large amount of vacant room still available. It seemed to them that there was space enough for twenty-five to fifty years. As soon as the Museum is joined to the Peabody Museum there will be more room still. The object of the University Museum is to make an exhibit out of the series of departments which constitute it; these departments being the zoölogical and palaeontological collections, the botanical collections, the geological and mineralogical collections, and the ethnological collections of the Peabody Museum.

The object of this exhibit is to afford means for research and teaching to the professors, and of learning to students, and to interest and instruct the general public. The University Museum should not compete with larger Metropolitan or National museums, but should be limited to collecting and displaying material for research and for study in the University. With these views, only one-fifth of the floor area is given up to exhibition. Two-fifths of the space remaining are used for storage of collections. Finally, two-fifths are devoted to laboratories and lecture-rooms, for undergraduates, for advanced students, and for professors.

It is desirable that there should be one Director of the whole Museum. Harmony, and the avoidance of duplicating collections are thus ensured. While the Director endeavors to equalize the separate departments as to space, it is impossible to equalize them as to funds. The present system, under Mr. Alexander Agassiz, is working well. It is to be remarked that Berlin has approved of, and has followed, this plan. The different departments are all interested in their respective publications; and while it is not advisable to form one series, yet a connection should be kept in mind.

The management of the University Museum, while it has a nominal Director, is yet in charge of a Museum Committee of one representative from each department. This organization is elastic, and retains the full liberty of the component parts.

The University Museum to-day represents an outlay of $1,250,000. Each one of its component museums needs nearly as great an annual income as is now available for the whole museum, except salaries. During the past seventeen years $350,000 has been expended in explorations and expeditions. The University Museum has no funds of its own, and it would be advisable that the collections placed on exhibition should be, as they are, under the Director of the University Museum, provided he could have an independent income to increase and care for them, thus leaving the departments to expend their reserves more for scientific work and research. To run the Museum as it should be would take an income of $40,000 a year.

Great and valuable collections have been placed with, or donated to, the Museum recently, by Messrs. Scudder, Bryant, Brewster, and Hyatt.

Among new objects of interest are a giraffe, eighteen feet high, representing an outlay of $2,500; a remarkable photograph of the *Souffrière* in eruption at St. Vincent; a mass of rock and lava thrown from this crater; a new portrait of Professor Louis Agassiz, painted by Ames when the Museum was first begun.

The library now contains, in all departments, 38,000 volumes. It is admirably arranged for ready use. The purchase and binding of books encroach largely on the funds of the Museum of Zoölogy. This department absolutely needs funds for special objects, for research, and collecting. It lacks Assistants, and money to pay them.

For the Committee,

DAVID W. CHEEVER.

May 11, 1904.

CXLII.

REPORT OF THE COMMITTEE ON INDIC PHILOLOGY (*FORMERLY* INDO-IRANIAN LANGUAGES).

To the Board of Overseers of Harvard College: —

The Committee on Indic Philology beg leave to offer the following report: —

In explanation of the new title assumed by the department, the Committee call attention to the action of the Faculty of Arts and Sciences, December 17, 1901, whereby it was voted "that the Department then designated as the Department of Indo-Iranian languages be henceforth designated as the Department of Indic Philology." This change was made owing to the fact that through the wide extension of the field of Indian research the old name had come to mean too much, while it was felt that the term Indic Philology, comprehensive enough in itself, would define more exactly the present actual work of the department. It should be added that the term philology is here employed in its wider sense, not as concerned with grammar alone, but as affording the key to the language, literature, history, and religion of the past.

The department is now in charge, as for several years past, of one professor, with a young assistant employed to conduct the elementary classes. Professor Lanman proposes, however, in case the assistant is reappointed, to allow him to conduct one or two of the advanced classes, while he himself resumes the first year's work, thus enabling him to come into closer contact with the beginners. The number of students electing these elementary courses, never large, has fallen off somewhat during the last three or four years; while, on the other hand, as it is gratifying to notice, an unusual number of advanced students have offered themselves, including several young scholars of great promise. The Committee wish to add that, although the study of Indian languages can hardly become a very popular one, they cannot speak in too high terms of the intelligent and scholarly way in which Professor Lanman handles his department and conceives its scope and possibilities. By his indefatigable efforts in the collection of early documents, he has acquired for the University the largest and most valuable library of Indian manuscripts now in the

country, and enabled Harvard College to offer facilities for the study of Sanskrit hardly to be found elsewhere. He has also in mind a course of lectures upon the Religions of India, which, if carried out, will give to the University public a comprehensive survey of Indian thought through the various epochs of its development.

The most noticeable work of the department, and one whose far-reaching value becomes more apparent every year, has been alluded to more than once in preceding reports. It is the "Harvard Oriental Series," which was initiated by Professor Lanman in 1890. The plan for this series contemplated the publication, with the coöperation of distinguished scholars in this country and in Europe, of a collection of volumes relating to the religions, philosophies, and literatures of India. This bold undertaking, though it is still in its early stages, has made most encouraging progress. Nine volumes have already been issued, or are in the printer's hands; and from Professor Lanman's description of these we draw the following account: "The first of these," he writes, "is a collection of North Buddha tales in the Sanskrit language, entitled Jataka Mala, edited by Professor Kern, of the University of Leyden. An English translation of this work, by Professor Speyer, of the University of Groningen, forms the first volume of the late Professor Max Müller's series entitled 'Sacred Books of the Buddhists.' A second volume, by Professor Garbe, of the University of Königsberg, upon the Sankhya philosophy, has been issued in the original Sanskrit, and a translation of this text into German may be found in the Proceedings of the German Oriental Society."

The third volume, by the late Henry Clarke Warren, entitled "Buddhism in Translations," "embraces 134 passages from the sacred Pāli literature, selected with reference to their forming . . . a well-rounded picture of the legend concerning Buddha, his teachings, and his sacred order." It may be added that a third and cheaper edition of this work has been issued, for sale in the principal cities of India, Ceylon, and Burma. The fourth volume, giving the Prakrit text of the only Prakrit drama extant, the Karpura Manjari, is edited by Dr. Konow, of the University of Christiania, and had the benefit of the revision of the most eminent Prakrit scholar in Europe, Professor Pischel, now of the University of Berlin. This is almost the first work of its kind issued in the West, and it serves the purpose also of giving a Prakrit text "as an entering wedge for the opening up of the sacred books of the Jaina religion, which is even older than Buddhism." An English translation, by Professor Lanman, is embodied in the volume. As Volumes V and VI of the

series, Mr. Lanman proposes to publish the posthumous works of the late Professor Whitney, of Yale University, "containing his translation of the Atharva Veda, of the text of which he and Professor Roth, of Tübingen, were joint editors." Professor Lanman, as pupil and friend of Professor Whitney, has undertaken to revise and complete this voluminous manuscript, and carry it through the press. "It is an entirely modest claim," adds Mr. Lanman, "to affirm that this commentary will long maintain for itself a place of first rate importance as an indispensable working tool for the purposes which it is designed to serve, and we may confidently believe that Whitney's labors will put the whole discipline of Vedic criticism upon a broader and firmer basis." Volumes VII and VIII are devoted to a critical edition with translation and commentary of the Brhaddevata, a Hindu treatise on the deities of the Rig Veda. This work has been prepared by Professor Macdonell, of Oxford, and is already passing through the press. The same may be said of the important Vedic Concordance by Professor Bloomfield, of Johns Hopkins University, which is already partly in type, and will form, when completed, a book of more than twelve hundred royal quarto pages, making the ninth volume of the series. A tenth volume, an edition of Kalidasa's Sakuntala, the masterpiece of Indian dramatic literature, is being prepared for publication in the series by Professor Pischel, of Berlin.

This full account of the "Oriental Series" is given by your Committee in order to draw more general attention to the publication, and in the belief that these works will prove not only a memorable contribution to scholarly research, but also an important stimulus to Oriental studies in the University.

EDWARD H. HALL,
A. V. WILLIAMS JACKSON,
WM. STURGIS BIGELOW,
Committee.

May 11, 1904.

CXLIII.

REPORT OF THE COMMITTEE ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY.

To the Board of Overseers of Harvard College: —

Your Committee has met several times and some of the members have attended courses in each of the subjects assigned to its consideration. Moreover, several hours were spent with the professors charged with the instruction, and questions of mutual interest were discussed.

ITALIAN.

The Committee is glad to be able to report that in Italian this year for the first time a well ordered series of courses has been offered, so that no important section of Italian literature between Dante's precursors and Carducci has been neglected. The number of students — eighty-five — electing Italian shows that this branch is more than holding its own in popular favor, and, what is most important, the fact that many scholars of high grade, especially from the Graduate School, now elect Italian, justifies the belief expressed in our previous reports that when a rational curriculum in Italian is offered the best students will avail themselves of it.

We regret that the course in Modern Italian Literature, conducted this year by Mr. Michell, is to be withdrawn next year. Without this course, the completeness of instruction is obviously destroyed. We can hardly imagine Harvard University announcing that it gave no instruction in German later than Klopstock, or none in French later than Voltaire: why should it tolerate a corresponding gap in Italian? We urge, therefore, that steps be taken to restore this modern course, and to make it permanent.

We regret also that, through the resignation of Professor Fletcher, the University is to be deprived of instruction in comparative literature, in which the works and influence of Italian writers necessarily play a very important part. A knowledge of Petrarch, Ariosto, and Tasso, for instance, is indispensable for any one who wishes to trace Elizabethan poetry to its sources. Accordingly, the University can-

not afford to let itself be crippled in comparative literature; and the other Romance languages not less than Italian will be at a serious disadvantage until Professor Fletcher's place is filled.

SPANISH.

Your Committee finds that the Spanish department is, on the whole, steadily improving, both as to scope and quality of instruction, as to the number of students who take the courses, and as to the spirit in which both instructors and students are working. It learns that there are less students in the courses than in the previous years since the Spanish War, but this appears to be merely a natural reaction. Professors and instructors are manifesting a spirit which is very hopeful.

It is desirable that the various courses should give opportunity to the student first of all to learn Spanish as a present live language, and its literature as a literature of to-day, and to understand the Spanish-speaking people in the many countries which they occupy to-day, and then, through advanced courses, to learn the past of the language, of the literature, and of the people, both as a study in comparative history and philology and as an aid to an adequate comprehension of Spanish-speaking people of to-day. A voluntary course, not counting for a degree, might be established for Spanish conversation and writing, open to those who have finished Spanish 1 with credit.

A larger allowance for the department libraries would be fruitful. A Spanish museum and reading room are desired by some.

ROMANCE PHILOLOGY.

The general statement made by your sub-committee in 1902, to the effect that this branch of linguistics receives thoroughly modern scientific treatment from Professors Sheldon, Grandgent, von Jagemann, Marcou, and Ford, who were then devoting a certain amount of their time to the subject, still holds true. To the staff just mentioned, Professor Hanns Oertel, in charge of Comparative Philology at Yale University, has been added. Professor Oertel has given during the first half-year a course numbered 1, entitled: General Introduction to Comparative Philology. This course, or nearly its equivalent, has, in previous years, been given by Professors Sheldon, Grandgent, and von Jagemann. In 1903–04, it is in character general enough to be adapted to the needs of students of ancient as

well as of modern languages. As its name indicates, the course is intended to give a general view of linguistic facts and of the interrelation of linguistic phenomena. It properly precedes a detailed investigation of some phase of the subject in a particular field.

In regard to the work done by the professors in all of the courses pertaining to Romance Philology, fully described in the Descriptive Pamphlet of the Courses in French and other Romance Languages, your Committee has only favorable comment to make. The latest results of modern scholarship are not only known to the professors but effectively made use of in the class-room, and in some cases in published work by the professors themselves.

Nevertheless, while all of this work is the best that can be done by good teachers provided with the best modern publications, the criticism made by your Committee in the last report, 1902, that as yet nothing has been done to advance linguistic science along the lines of experimental phonetics as illustrated by the Abbé Rousselot's published works in Paris, and to a certain extent too by those of Professor Scripture of Yale University, still holds good. The importance of the experimental method upon modern scientific investigation was briefly touched upon in your Committee's last report. Professor Lang, a former member of the Committee on Italian, Spanish, and Romance Philology, and Professor of Romance Philology in Yale University, summed up this importance in one phrase, when he said "It (Experimental Phonetics) is as indispensable to the linguist, — I mean, of course, the student of linguistics, — as biology is to a first-class naturalist or to a physician." In order to carry on here similar experiments to those made in the experimental laboratory of the Collége de France, by the Abbé Rousselot, the value of which has been recognized by the best known phoneticians, a simple machine is indispensable. The cost of this machine is about $125. Your Committee, realizing how important it is that a philological department so thoroughly scholarly and modern in other respects as that at Harvard should also be abreast of the times in promoting linguistic research along the best and most advanced lines of scientific investigation, made an attempt to carry out the recommendation submitted in the last report, — to secure funds for suitable equipment of a laboratory of experimental phonetics. Fourteen gentlemen, graduates of our Alma Mater, subscribed sums of five and ten dollars. The net sum of $125 was turned over to Professor Sheldon. Three additions to this sum have since been received.

There was a prospect that Mr. Tuttle, a young man who had studied with Professor Scripture at Yale, might come to Harvard to study, and at the same time perform some experiments on Professor Scripture's machine. The plan, however, failed to materialize, Mr. Tuttle going abroad to study. Your Committee has had an interview in regard to this subject with Professors Sheldon and Grandgent. They are as anxious as ever to make a beginning of this scientific method of linguistic study. The means at their disposal as yet are not quite adequate. It is the opinion of your Committee that could $50 more be raised the department would then be in a position to obtain results that would amply justify the necessary expense.

Important and desirable as is, in the light of recent scientific research, the establishment of a laboratory of experimental phonetics at Harvard, there is one matter that is of even more concern to the department and which renders practically impotent a good part of the best work done in advanced study and linguistic research. While such institutions as Columbia, Chicago, and Johns Hopkins are continually winning laurels by attracting favorable comment to the published results contained in their students' theses for the doctorate, the like productions of Harvard men, in no wise inferior, are relegated to some sequestered nook of the College Library, where year in and year out they are unseen. This is a cause of chagrin to all concerned with these valuable contributions. Your Committee is informed that in no case is a thesis accepted the results of which are not well worth being made known through publication. It is also informed that such work, as a rule, is performed by students who are impecunious; that since Professor Ford's thesis was published shortly after 1897, when he took his doctor's degree, no student who has won the doctorate in Romance work, with the exception of Dr. Potter, has been able to have his thesis printed. Every year more students come up for the doctorate in Romance Philology. There are seven candidates for the Ph.D. degree in this subject the coming June. These facts speak for themselves. In the opinion of the heads of the department, the lack of funds for publishing these results, — the best produced by the most brilliant students, aided by the professors — is at present the most crying need of the department. Until funds for this purpose are available, it is the opinion of your Committee that the theses of successful candidates, instead of being stored away in the basement of the Library, would better serve the purpose of all concerned, — professors, students, and the public who are really interested to see one of these

contributions and to learn at least what it is like — by being placed on a special shelf by themselves, near the books of reference reserved for the students of Romance Philology. In this way, at least, these valuable contributions, examples in many cases of years of laborious toil and research, would be saved from the utter oblivion to which at present they are undeservedly consigned.

GEORGE B. SHATTUCK,
J. RANDOLPH COOLIDGE, JR.,
WILLIAM R. THAYER,
JAMES GEDDES, JR.,
WILLIAM B. DE LAS CASAS,
JUSTIN H. SMITH.

MAY 11, 1904.

CXLIV.

REPORT OF THE COMMITTEE TO VISIT THE JEFFERSON PHYSICAL LABORATORY AND DEPARTMENT OF PHYSICS.

To the Board of Overseers of Harvard College: —

The undersigned members of the Committee appointed to visit the Jefferson Physical Laboratory and Department of Physics, having attended a duly notified meeting at the laboratory building on Thursday, May 12, 1904, have the honor to report as follows: —

During the current academic year, the Jefferson Physical Laboratory has shown a remarkable development of its powers for the instruction of undergraduate students and the promotion of research.

The principal laboratory course, "Physics *C*," which covers in a quantitative manner the main subjects embraced under the head of Physics and is especially adapted for those who intend to enter the Medical School, has been taken by a large number of undergraduates who have worked enthusiastically under Professor Sabine, to whom the great development of this elective is due. In this course the laboratory space has been more than doubled and the instrumental means have been brought up to modern standards.

The development of the laboratory in the direction of research is attested by the following list of instructors and students now engaged in the subjects for investigation appended to their names: —

Professor Trowbridge: Spectra of Gases.
Professor B. O. Peirce: The Duration of Magnetic Impulses.
Professor Hall: Contact Electricity.
Professor Sabine: Researches in Sound.
Dr. Lyman: Short Wave Lengths of Light.
Dr. H. W. Morse: Effect of Environment on the Spectra of Metals.
Dr. G. W. Pierce: Possibility of Tuning in Wireless Telegraphy.
Mr. Hogg: Viscosity of Gases.
Mr. Blackwell: Refraction of Light produced by Electric Stress.
Mr. McKay: On new forms of Receivers in Wireless Telegraphy; and a remarkable effect of Bismuth Films.
Mr. Davis: Research on the effect of Longitudinal Vibrations on Magnetism.
Mr. Palmer: Ionization in Steam Jets.
Mr. Smith: An investigation in Thermodynamics.
Mr. Anderson: A research in Polarization of Light.
Mr. Churchill: The Conveyance of Heat by an Electric Current.
Mr. Adams: The Energy of X-Rays.

The results of the above mentioned investigations by Professor Trowbridge and Doctors Lyman and Morse were presented at a recent session of The National Academy of Sciences. They were then received with keen interest and have since attracted the attention of the scientific world. Mr. Hogg's results on the viscosity of gases cannot fail to attract great attention from investigators in Europe who have occupied themselves with this difficult subject without having at their disposal the experimental means which the Jefferson Physical Laboratory affords.

It has been decided to publish annually a volume of laboratory researches concluded each year. The publication of this series of volumes, of which Volume I is now issued, will doubtless prove to be a great incentive to young men who are attracted to the important subject of Physical Science.

The gift of Mr. Coolidge for the promotion of original research has given rise to an intellectual activity in the Jefferson Physical Laboratory which is unequalled in any American laboratory, and is abroad equalled only by The Imperial Laboratory of the German Empire at Charlottenburg.

FRANCIS BLAKE,
T. JEFFERSON COOLIDGE,
ELIHU THOMSON,
FREDERICK P. FISH,
A. LAWRENCE ROTCH.

May 25, 1904.

CXLV.

REPORT OF THE COMMITTEE ON EDUCATION.

To the Board of Overseers of Harvard College:—

The Committee on Education have had several interviews with the instructors in that Department, Professor Hanus and Mr. Norton, and have carefully examined a report on its operations and needs, prepared for their use by the former. Professor Hanus has also contributed an interesting article on the general subject of the Study of Education in the Colleges to the *Harvard Monthly* of October, 1903. The hours at which the greater part of the courses are held has unfortunately militated against the personal presence of most of the Committee. They are very happy to testify to the devotion of Professor Hanus and his assistant to their work, under circumstances not altogether encouraging.

The Department of Education is a new one, having begun operations so lately as 1891. Three courses were offered in that year, and were attended by four students. The roll of the current year shows an attendance in all of 194 Harvard students, and 64 from Radcliffe College; to which should be added 123, attending the Summer School of 1903.

The Department now offers ten courses, not all of which, however, can be given in one year. For the specific details the Committee may properly refer to the schedule of courses issued by the Department in pamphlet form. It may suffice here to say that four of the ten courses are arranged in a group intended primarily for undergraduates and graduates, the remaining six specially for graduates. The head of the Department has felt that with the existing force, and indeed with any force, it should adapt its work chiefly to the need of graduates and maturer minds, standing rather in the rank of a graduate or professional school than a division of the College proper.

It proposes to offer instruction along three lines: (1) To initiate those who are looking forward to the profession of schoolmaster by instruction in the problems and methods of class teaching; (2) To investigate school systems, by a comparative study of these in the principal cities of the United States, and, if practicable, of Europe, and thus to fit the more ambitious and better qualified members of

the University for the position of school principals and superintendents; (3) To take up the subject of Education in its history, theory, and practice as a part not merely of professional but of liberal training generally, coördinate with the study of civil government, economics, and social science.

In the work of the strictly professional courses the regular staff of the Department have their efforts supplemented in two ways: (1) Members of various other Departments have given courses in the methods of teaching their specific studies; (2) Students attending these courses have had opportunities to visit the public schools of certain neighboring cities, and in some cases to teach therein, of course under the control and direction of their principals, while their work is discussed in Cambridge with the assistant, Mr. Norton.

In the History and Theory of Education, the discussion of programmes of study, and the administration of schools and school systems, the work is wholly conducted by Professor Hanus and Mr. Norton. The instruction is carried on by all the various methods generally employed in University courses.

The members of the Department feel that such a staff is wholly inadequate to the work they have laid out. It is inadequate merely in view of the number of pupils demanding their attention; and it is inadequate in that various branches of the great subject of Education, elementary and advanced, historical, theoretical, and practical, must either be crowded upon the shoulders of two individuals, which might more reasonably engage the attention of several, or else some of these branches must be entirely ignored. The assistance derived from members of other departments in training for specific instruction is highly valued, and admits of almost indefinite development; but the sum which the Corporation have felt it in their power to appropriate for additional compensation to instructors already very busy in their own departments is but small.

The Department of Education should be able to call to its aid the services of men who are already distinguished as practical teachers and administrators, and who might find academic instruction an acceptable change after the fatigue of school work; but such strengthening of the staff is quite beyond any available means.

The Department needs its special library, like others; and the generosity of some friends has enabled it to make a beginning in this direction; but it still is lacking in many needed publications, and yet more in the mechanical apparatus of Education, which has been greatly developed of late years, and is considered essential by the most accomplished students of paedeutics.

These instructors also feel that their pupils who have pursued special investigations to valuable results should be able to have these results printed, as is done by the pupils in other departments. It may be that this need and those last mentioned are best supplied by the contributions of persons interested in the work, rather than in grants from the College funds. In the present state of the College treasury, the Committee are extremely reluctant to urge any increase in the sum devoted to the Department of Education. Yet it should be noted that the support and extension of this branch of University study appears to be distinctly called for in public opinion. Several institutions already support such a department on an extensive scale; and in many states of the Union those who have the control of school appointments expect candidates for the position of teachers, if they are without practical experience, to show that they have had at least a year of paedeutic training. It may well be believed that, as time goes on, those graduates of Harvard who seek employment as teachers will find the appointing powers giving the preference to such as have spent an adequate time in the study of Education; and if it shall be found that in this respect Harvard is behind other universities, such authorities will be disposed to look in their direction rather than to us.

The Committee do not doubt that the Corporation, when it has a larger income at its disposition, will recognize the claims of this Department for a more liberal and permanent support. Meanwhile it is desirable that it should be fully organized as an independent Division, with its own representative on all boards to which each department contributes one. Such organization may properly include members of other divisions of study whose coöperation and counsel to the teachers of Education would be invaluable. Students electing courses in Education should have their specific claims considered in the distribution of graduate scholarships and fellowships.

The head of the Department is at present designated Professor of the History and Art of Teaching. The scope of the work of this Department would seem to suggest Professor of Education as a more appropriate title.

WILLIAM EVERETT, *Chairman*,
WILLIAM T. PIPER,
EDWIN P. SEAVER,
GRAFTON D. CUSHING,
JOHN F. MOORS.

June 1, 1904.

CXLVI.

REPORT OF THE COMMITTEE ON GEOLOGY, MINERALOGY AND PETROGRAPHY.

To the Board of Overseers of Harvard College: —

The Committee met the officers of the Department, in Cambridge, on January 2d.

The Department has in the past been greatly handicapped by lack of room; but now, in its new and attractive quarters in the Geological Wing of the Museum, ample space is provided for many years to come. Here the Department has large and convenient laboratories and lecture rooms. In fact, the advantages of the new quarters are so great that the work of both the officers and students has been far more systematic and effective than formerly.

A small working meteorological observatory is much needed, where students in meteorology and climatology can be taught the use of the ordinary instruments. The sum of one hundred dollars has already been secured towards establishing such an observatory.

The Geological Museum now has spacious rooms with excellent light from the south and east. The only exhibit installed at present is a large model of Boston and vicinity. The Museum also has a valuable collection of relics from the ruined city of St. Pierre, Martinique, and a number of specimens from the Caribbean Islands. It is proposed to equip the exhibition rooms with wall and centre cases. Unfortunately, there is only money enough available to fit up some old cases, given by the Museum of Comparative Zoölogy.

The addition of electric lights in the Mineralogical Museum, to illuminate the specimens, would add greatly to the effectiveness of the exhibits. The Museum has, during the past year, acquired many valuable specimens.

The Committee wish to emphasize the needs of the Summer School in the Department of Geology and Geography. Summer field courses have been conducted for many years in various parts of the country and are of the greatest value to the students. There is probably no district in this country in which the student can learn so much in a season's work as in the Rocky Mountain region. The Department finds itself greatly hampered from lack of funds, as the expenses

of conducting and attending a course at such a great distance are necessarily great. Scholarships of from one hundred to three hundred dollars, given by friends of the Department, have reduced this difficulty somewhat. In 1902 two advanced students were thus enabled to make a special study in southwestern Utah, the results of which were published in the Bulletin of the Museum of Comparative Zoölogy. In 1903 four scholarships were secured, and five for 1904. This, however, is an uncertain and unsatisfactory method of meeting the requirements of the Summer School. To do this, and properly pay the instructors, an endowment fund yielding at least two thousand dollars per year should be provided.

The Gardner collection of geological and geographical photographs has been increased from year to year from the income of the Gardner fund. The collection has now grown to be a large and valuable one; its value to the general public would be greatly enhanced if a well-trained geologist, skilled in photography, could be associated with the Department, in classifying and reproducing views for educational uses in schools and colleges. At present no member of the Department can give the time required for this work.

The scientific activity of the Department is seen in the list of publications given in the President's Report; it is unfortunate they should be scattered in so many periodicals, and that a great part of them cannot be published — for want of funds — in a regular publication of the Department connected with those of the Museum of Comparative Zoölogy.

For the Committee,

R. L. AGASSIZ,
Chairman.

September 28, 1904.

CXLVII.

REPORT OF THE COMMITTEE TO VISIT THE BOTANIC GARDEN AND BOTANICAL MUSEUM.

To the Board of Overseers of Harvard College: —

The Committee to visit the Botanic Garden and Botanical Museum has the honor to submit the following report: —

The Botanical Museum.

Thanks to the unwearied interest of Miss Mary Lee Ware, a member of this Committee, provision has been made to transfer from the unsafe cartons to firm plaques of plaster of Paris, the large collection of Blaschka Glass Models of Plants in Flower. The change has been nearly completed at a cost of fifteen hundred dollars, the entire charge being borne by Miss Ware.

Mr. N. C. Nash, a member of this Committee, gave in 1899 the fine Lecture-room which bears his father's name. The sum given for this Lecture-room was twenty thousand dollars. At that date, there were no practicable applications of electricity to aid in ventilation. Mr. Nash has now placed at the disposal of the University the sum of two thousand two hundred dollars, for the purpose of introducing the most improved methods of ventilation and electric lighting.

Two anonymous friends of the Museum have supplied sufficient funds to prepare materials for the publication of an illustrated catalogue of our collection of the products of economic plants.

From the foregoing, it appears that the Museum is well cared for by its friends.

The large collection of fossil plants procured at very great expense by the late Professor Louis Agassiz, and which remained for many years inaccessible to students, has been put in excellent condition for study and reference, by Professor Robert T. Jackson. The cost of this work and of the installation of the specimens has been met by Mr. Elliot C. Lee, a member of this Committee. From his gift there now remains a considerable sum which is being devoted, as occasion requires, to the further preparation of certain of the very valuable type-specimens.

The Experiment Station in Cuba continues to prosper. Mr. Atkins expresses himself as thoroughly satisfied with the course which the Garden has pursued with reference to the Station, and he is pleased at the interest which the Garden management continues to show in the enterprise. Mr. Grey is now the superintendent on the estate, and is doing his work well.

The Botanic Garden.

It is well known that the Garden comprises about seven acres of heavy clay land and two ranges of greenhouses with sixteen compartments. The grounds are enclosed by a fence not far from a third of a mile long.

The University and this community expect that these grounds and houses should be kept in a neat and attractive condition and filled with illustrations of the principal orders of flowering plants. Such specimens now number about five thousand.

Further, it is expected that the large classes in elementary Botany should be fully supplied with specimens of plants in flower during the months of February, March, April, and May, this being the only period when time in our College year can be found for such instruction. To cultivate this enormous number of plants out of season entails great expense. When these demands for the proper conduct of the seven acres and the houses are compared with the demands made upon the administration of a private place, it is at once seen that a Botanic Garden requires more labor, and labor of a higher grade, than is usually called for on a private estate. Examination of the Garden accounts at the College Bursar's office shows that the expenditure for labor, fuel, and materials has been brought down to the lowest point consistent with the safety of the plants and the discharge of the trust.

The ordinary running expenses of the Garden proper are now seven thousand dollars a year. This does not take into account the occasional heavy outlays for rebuilding, but it includes ordinary repairs. To meet this reasonable charge there is at command only the income from the invested funds of the Garden, and a small rental from the Garden house occupied by Mrs. Gray, the whole amounting to less than five thousand annually. There is, therefore, a yearly deficit of about two thousand dollars. In past years a portion of these deficits (which appear on the books of the College Treasurer as Advances to the Botanic Department) has been made up by gifts from friends. There is now standing against this account, and chargeable with interest, the sum of $6000.

The fence, now more than half a century old, and patched to the last limits of stability, ought to be replaced by a strong and better one.

The Palm-house and its two wings are no longer safe. In 1883, Messrs. H. H. Hunnewell, F. L. Ames, and B. P. Cheney gave to the Garden $4800, for the construction of a wooden house, good for twenty years. This year completes twenty-one years' usefulness, but the ravages of dry and wet rot and the damage from white ants have honeycombed the whole building, so that it is unwise to face another winter with such dilapidation. It is believed that a steel structure on a somewhat larger scale would be a fine gift to the University, and it would be accepted with pleasure by the management of the Garden. Failing this, provision must be made for a simple replacement by a wooden building on the same lines as now.

The Committee does not believe that it is feasible to still further reduce the expenses without impairing the efficiency of the Garden, but upon its present basis there is now needed $2000 for the annual deficit, and $4800 for a new Palm-house. There should be provided, also, for a new fence around the grounds, say $1200, and a sum sufficient to repay the advances, say $6000.

The Committee again wishes to commend Dr. Goodale's skilful direction of the University's interests committed to his charge.

Respectfully submitted for the Committee,

WILLIAM A. BANCROFT,
Chairman.

September 28, 1904.

CXLVIII.

REPORT OF THE COMMITTEE ON REPORTS AND RESOLUTIONS.

To the Board of Overseers of Harvard College: —

The Committee on Reports and Resolutions respectfully submits that the following Visiting Committees have made reports during the last academic year: —

1. On Political Economy, Sept. 30, 1903.
2. On the Administration of the University Chapel, Sept. 30, 1903.
3. To visit the Botanic Garden and Botanical Museum, Oct. 14, 1903.
4. On Modern History and International Law, Dec. 2, 1903.
5. On English Literature, Dec. 2, 1903.
6. On Fine Arts and Architecture, Dec. 2, 1903.
7. On Zoölogy, Jan. 13, 1904.
8. To visit the Medical and Dental Schools, April 13, 1904.
9. On Indic Philology, May 11, 1904.
10. To visit the University Museum, May 11, 1904.
11. On Italian, Spanish, and Romance Philology, May 11, 1904.
12. To visit the Jefferson Physical Laboratory and Department of Physics, May 25, 1904.
13. On Education, June 2, 1904.
14. On Geology, Mineralogy, and Petrography, Sept. 28, 1904.
15. To visit the Botanic Garden and Botanical Museum, Sept. 28, 1904.

The number of reports of committees presented during the last year was, therefore, six more than were submitted during the year preceding. Under the provisions of Section 28 of the revised (1902) Rules and By-Laws of the Board of Overseers, the several Visiting Committees are instructed to report in writing at least once in three years. No reports appear to have been filed during the last three years by the following committees: —

1. Classics.
2. Botany.
3. Government.
4. Mathematics.
5. Music.

6. Semitic Languages.
7. Composition and Rhetoric.
8. Philosophy.
9. Chemical Laboratory.
10. Germanic Languages and Literatures.
11. Physical Training, Athletic Sports, and Sanitary Condition of all Buildings.
12. Gray Herbarium.

In reporting these delinquencies under the rule, your Committee wishes to add that it has no reason to suppose the omission of reports was due to indifference on the part of those composing the committees in question. On the contrary, several of the committees which have submitted no formal reports are known to have been exceptionally active in the performance of their duties, and to have evinced marked interest in their Courses and Departments. Others of the committees, such as that on Government, and on Physical Training, Athletic Sports and Sanitary Condition of all Buildings, although mixed committees, are practically immediate committees of the Board, and in no case have they failed to give attention to all matters referred to them. The Committee on Music again has been exceptionally active; as also that on Philosophy. The Committee on Engineering, the last provided, has filed no report as yet.

The Committee would again call attention, with additional emphasis, to the following passage in its last annual report: —

"The efficiency of every visiting committee depends almost exclusively on its chairman. Moreover, while it is customary for this Board, in reporting lists of committees, to name some member of each committee first, who is *prima facie* its chairman, and will act as such until the committee is organized and some other member of it is made chairman in his place, yet the final selection of its chairman is, as your Committee stated in a Report (No. CXXIII) made in this same connection a year ago, a matter entirely within the province of each committee. Not infrequently the person named first on the committee is unwilling to assume the labor and responsibility of the chairmanship. In such case, his proper course is to call the committee together and explain the situation in which he stands, requesting the committee to designate its own chairman. On the other hand, should the chairman of a committee be absent from the country, or otherwise incapacitated from performing his duties, it would be incumbent upon some member of the committee, presumably the second person named upon it, to call the committee together in order that it might proceed to organize itself. In this connection your Committee desires to call the particular attention of the chairmen of the several committees to the following provision of Section 28 of the Rules and By-Laws of the Board: 'Each Committee shall hold

early in the academic year at least one meeting with all the Professors and Assistant Professors in the Department or Course of Instruction such Committee is appointed to visit, in order to receive suggestions, inquire into defects and needs, hear complaints, and give encouragement and counsel.'"

All of which is respectfully submitted.

By order of the Committee on Reports and Resolutions,

CHARLES F. ADAMS,
Chairman.

Boston, November 23, 1904.

COMMITTEES APPOINTED BY THE BOARD OF OVERSEERS.

1905.

ON ELECTIONS.

MOORFIELD STOREY,
JAMES J. STORROW,
STEPHEN M. WELD,
WILLIAM CALEB LORING,
EDMUND WETMORE.

ON REPORTS AND RESOLUTIONS.

CHARLES F. ADAMS,
EDWIN P. SEAVER,
WILLIAM A. BANCROFT,
WINSLOW WARREN,
CHARLES E. NORTON,
FRANCIS L. HIGGINSON,
MOSES WILLIAMS.

ON DEPARTMENTS.

To visit the Divinity School.

GEORGE A. GORDON,
PAUL R. FROTHINGHAM,
CHARLES F. DOLE,
ARCHIBALD M. HOWE,
JAMES DENORMANDIE,
DANIEL MERRIMAN,
AUGUSTUS P. LORING,
HORACE S. SEARS,
ARTHUR S. JOHNSON,
GEORGE H. ELLIS.

To visit the Law School.

WILLIAM C. LORING,
ROBERT GRANT,
JOHN NOBLE,
EDMUND WETMORE,
CHARLES J. BONAPARTE,
LOUIS D. BRANDEIS,
JOSEPH B. WARNER,
GEORGE PUTNAM.

To visit the Medical and Dental Schools.

FRANCIS L. HIGGINSON,
DAVID W. CHEEVER,
GEORGE B. SHATTUCK,
CHARLES F. FOLSOM,
ALEXANDER COCHRANE,
EDMUND D. CODMAN,
WILLIAM STURGIS BIGELOW,
HENRY H. SPRAGUE,
LUTHER D. SHEPARD,
HENRY SALTONSTALL HOWE,
GEORGE F. FABYAN.

To visit the Bussey Institution.

FRANCIS H. APPLETON,
MOORFIELD STOREY,
FRANCIS SHAW,
C. MINOT WELD,
WILLIAM S. HALL,
AUGUSTIN H. PARKER,
WALTER C. BAYLIES,
JOHN LOWELL,
CARROLL DUNHAM.

To visit the Library.

HERBERT PUTNAM,
GEORGE E. ADAMS,
CHARLES S. FAIRCHILD,
FRANCIS R. APPLETON,
PAUL R. FROTHINGHAM,
STEPHEN SALISBURY,
CHARLES C. SMITH,
ELIHU CHAUNCEY,
SAMUEL A. GREEN.

To visit the Observatory.

EDWIN P. SEAVER,
HENRY S. HUIDEKOPER,
CHARLES S. FAIRCHILD,
SIMON NEWCOMB,
ROBERT TREAT PAINE,
CHARLES F. CHOATE,
FRANCIS H. PEABODY,
CHARLES P. BOWDITCH,
GEORGE I. ALDEN,
ANNA P. DRAPER (MRS. HENRY DRAPER),
GEORGE R. AGASSIZ,
ELIHU THOMSON.

To visit the Botanic Garden and Botanical Museum.

William A. Bancroft,
David Pingree,
Nathaniel C. Nash,
Oliver Ames,
Elliot C. Lee,
Mary Lee Ware (Miss),
Edwin F. Atkins,
Arthur F. Estabrook,
Walter Hunnewell,
William Powell Wilson,
Frederick A. Delano.

To visit the Gray Herbarium.

Francis H. Peabody,
Moses Williams,
George G. Kennedy,
Nathaniel T. Kidder,
Emile F. Williams,
Walter Deane,
George W. Hammond,
George R. White,
John E. Thayer,
Joseph R. Leeson.

To visit the University Museum.

David W. Cheever,
Augustus Hemenway,
Samuel Hill,
Charles F. Folsom,
George P. Gardner,
Rodolphe L. Agassiz,
Henry F. Sears,
Francis Noyes Balch.

To visit the Museum of Comparative Zoölogy.

David W. Cheever,
Charles F. Folsom,
Louis Cabot,
Dudley L. Pickman,
William Brewster.

To visit the Peabody Museum.

Augustus Hemenway,
Samuel Hill,
Charles P. Bowditch,
Henry W. Haynes,
Jesse W. Fewkes,
Clarence J. Blake,
Clarence B. Moore,
Elliot C. Lee.

To visit the Arnold Arboretum.

Stephen M. Weld,
Augustus Hemenway,
Walter Hunnewell,
Charles E. Stratton,
Mary S. Ames (Miss),
Abby A. Bradley (Miss),
Nathan Matthews, Jr.,
John E. Thayer,
Frank G. Webster,
Frederick S. Moseley.

To visit the Lawrence Scientific School.

Francis L. Higginson,
Francis R. Appleton,
Erasmus D. Leavitt,
John Lawrence,
Abbott Lawrence Rotch,
Charles H. Manning,
J. J. Myers,
Philip Stockton.

To visit the Jefferson Physical Laboratory and Department of Physics.

Francis Blake,
James J. Storrow,
T. Jefferson Coolidge,
Elihu Thomson,
Erasmus D. Leavitt,
Frederick P. Fish,
Abbott Lawrence Rotch,
Charles Proteus Steinmetz.

To visit the Chemical Laboratory.

Edward D. Pearce,
Charles F. Folsom,
Wolcott Gibbs,
Alexander Cochrane,
Samuel Cabot,
Edward Mallinckrodt,
William H. Baldwin, Jr.,
Clifford Richardson.

To visit the Stillman Infirmary.

Clarence J. Blake,
David W. Cheever,
Augustus Hemenway,
George B. Shattuck,
Charles F. Folsom,
James A. Stillman,
Philip B. Howard.

ON PHYSICAL TRAINING, ATHLETIC SPORTS, AND SANITARY CONDITION OF ALL BUILDINGS.

Robert Bacon,
Henry S. Huidekoper,
George W. Weld,
Robert F. Clark,
Edwin Farnham,
Maurice H. Richardson,
William Hooper,
Clarence J. Blake,
Samuel H. Durgin.

ON THE ADMINISTRATION OF THE UNIVERSITY CHAPEL.

Paul R. Frothingham,
William Lawrence,
S. McChord Crothers,
George Wigglesworth,
Roland W. Boyden,
William DeWitt Hyde.

ON THE TREASURER'S ACCOUNTS.

Moses Williams,
Stephen M. Weld,
Samuel Hill,
William C. Endicott,
Gordon Abbott,
Grafton St.L. Abbott,
Allan Forbes,
Arthur Lyman,
Richard C. Storey,
John L. Saltonstall.

FOR THE COLLEGE.

ON GOVERNMENT.

Francis R. Appleton,
William Lawrence,
Moorfield Storey,
Robert Grant,
David W. Cheever,
William W. Goodwin,
Gardiner M. Lane,
Charles C. Jackson.

FOR THE COURSES OF INSTRUCTION.

ON THE SEMITIC LANGUAGES.

Jacob H. Schiff, Stephen Salisbury, George Wigglesworth,
Isidor Straus.

ON INDIC PHILOLOGY.

Edward H. Hall, A. V. Williams Jackson, William Sturgis Bigelow.

ON THE CLASSICS.

Gardiner M. Lane,
William W. Goodwin,
Babson S. Ladd,
James Loeb,
Henry B. Chapin.
Prentiss Cummings,
W. Amory Gardner,

ON ENGLISH LITERATURE.

Robert Grant, George W. Cooke, Bliss Perry,
Hammond Lamont, William R. Thayer.

ON COMPOSITION AND RHETORIC.

Charles F. Adams, George R. Nutter, Edward S. Martin,
Hammond Lamont.

ON GERMANIC LANGUAGES AND LITERATURES.

Henry W. Putnam,
Clement S. Houghton,
Louis Prang,
Heinrich Conried,
Frederick P. Fish,
George A. Bartlett.

ON FRENCH.

J. Templeman Coolidge, Jr.,
Charles J. Bonaparte,
James H. Hyde,
Russell Sullivan,
Gordon Abbott.
Howard G. Cushing,
Francis McLennan,

ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY.

George B. Shattuck, J. Randolph Coolidge, James Geddes, Jr.,
William R. Thayer, William B. de las Casas.

ON ANCIENT HISTORY, MEDIAEVAL HISTORY, AND ROMAN LAW.

John Noble, William Everett, Roger F. Sturgis,
Arthur P. Stone.

ON MODERN HISTORY AND INTERNATIONAL LAW.

James F. Rhodes, William F. Wharton, William G. Peckham,
William R. Thayer.

ON POLITICAL ECONOMY.

Arthur T. Lyman, Charles S. Fairchild, Horace E. Deming,
John E. Thayer, John F. Moors.

ON PHILOSOPHY.

George B. Dorr, Richard H. Dana, William R. Warren,
Richard C. Cabot, Reginald C. Robbins, Joseph Lee.

ON EDUCATION.

William Everett, Edwin P. Seaver, John F. Moors,
William Taggard Piper, Grafton D. Cushing.

ON FINE ARTS AND ARCHITECTURE.

Charles E. Norton, Francis Bartlett, Daniel H. Burnham,
Frank D. Millet, Edward Robinson.

ON MUSIC.

Arthur Foote, Charles P. Gardiner, Frank E. Peabody,
Horatio A. Lamb, George L. Osgood, Percy L. Atherton.

ON MATHEMATICS.

Seth C. Chandler, Percival Lowell, William Lowell Putnam,
George A. Wentworth.

ON ENGINEERING.

Joseph R. Worcester, James J. Storrow, Edward W. Rice, Jr.,
Charles H. Manning, Frederick P. Fish, Edmund A. Stanley Clark,
Charles C. Schneider.

ON BOTANY.

Nathaniel C. Nash, George G. Kennedy, Walter Deane,
Edward L. Rand.

ON ZOÖLOGY.

David W. Cheever, William Brewster.

ON GEOLOGY, MINERALOGY, AND PETROGRAPHY.

Rodolphe L. Agassiz, George P. Gardner, Raphael Pumpelly,
William Sturgis Bigelow, William E. C. Eustis.

ON MINING AND METALLURGY.

John Hays Hammond, R. Alexander F. Penrose, Jr., Edgar C. Felton,
Charles P. Perin, Quincy A. Shaw, Jr., Hennen Jennings,
Frank H. Taylor.

CXLIX.

REPORT OF THE COMMITTEE TO VISIT THE PEABODY MUSEUM OF ARCHAEOLOGY AND ETHNOLOGY.

To the Board of Overseers of Harvard College: —

The Building. Every year the completion of the building, filling the space between the western wall of the Peabody Museum and the eastern wall of the southern corner of the University Museum building, becomes more important. The present halls and cases are overcrowded, and thousands of specimens that should be placed in cases, and thus made available for instruction and research, are stored in every possible place from attic to basement. Many valuable collections have been thus stored for years. A large number of moulds of sculptures and hieroglyphic tablets remain uncast, simply because we have not a foot of available space for exhibition. The hall in which have been placed the collections and casts already made is so overcrowded as to make it difficult to study the casts of important sculptures and monoliths, or even to move about in the hall during the hours when visitors are present. These collections are known the world over to be of the first importance in the study of the prehistoric archaeology of Mexico and Central America, and they are as important in researches relating to the history of man as the collections of Egyptian archaeology.

It is for our Museum to bring this culture of prehistoric America to the knowledge of the world by exhibiting these wonderful monuments and inscriptions.

It has been estimated that the cost of the completion of the building will be about $150,000, and it is hoped that before long some friend of the University will provide this sum for the purpose.

The funds available for the care of the Museum are inadequate, and were it not for the annual gifts of a few friends for current expenses and for the salaries of a Museum assistant, a secretary and a clerk, we should be unable to continue the active work which has marked the administration of the Museum. Fortunately, the Corporation of the University has, during the present year, relieved our meagre income of the expense of heating and the care of the building. This will enable the small income of the Museum's fund to be devoted to the care and labelling of the specimens.

Instruction. This was begun by the Curator of the Museum, who took young men and women as private students, accepting their

work as compensation. Afterward, in 1886, the Peabody Professorship was established, and the Peabody Professor and Curator then took graduate students who wished to follow anthropology as a profession. Seven students have taken the Doctor's degree under his instruction. In 1895 courses of instruction were offered to undergraduates as well as to graduates, and Instructors in Anthropology have been appointed by the Corporation from among those who have taken the Doctor's degree in this department. At the present time Dr. Dixon is Instructor and a member of the Faculty of Arts and Sciences, and Dr. Farabee is Instructor under his second appointment.

Owing to the necessity on the part of the Corporation of reducing the number of instructors in all departments of the University, the services of Dr. Farabee would have been lost for the coming year, had not several friends subscribed the $500 needed to make up the meagre salary of $1,000 for next year, which he has received this year. There are now in the Department of Anthropology, with its sub-divisions of Somatology, Archaeology, and Ethnology, a full course in Anthropology by Dr. Farabee, and a full course in American Archaeology and Ethnology by Dr. Dixon, open to both graduates and undergraduates. In these courses the Peabody Professor gives certain lectures during the year. Primarily for graduates, there is a half-course on Prehistoric Archaeology and European Ethnology by Dr. Farabee, and a half-course in American Indian Languages by Dr. Dixon, a half-course on Ethnology of Oceania by Dr. Dixon, and a half-course on Somatology by Dr. Farabee. For students who are studying for the Doctor's degree, there are Research courses as follows: American Archaeology and Ethnology under the Peabody Professor; American Languages under Dr. Dixon; Advanced Somatology under Dr. Farabee.

The following was the attendance in these courses during the year 1903–4: Graduates, 5; Seniors, 22; Juniors, 30; Sophomores, 30; Freshmen, 6; Special, 6; Scientific School, 7; 106 in all.

The general course in Anthropology was also given to 17 Radcliffe students.*

Respectfully yours,

AUGUSTUS HEMENWAY,
For the Committee.

* The present year, 1904–5, there are 272 students in the three courses of the first half-year.

This year there are 28 Radcliffe students in two courses.

Boston, November 15, 1904.

CL.

REPORT OF THE COMMITTEE TO VISIT THE STILLMAN INFIRMARY.

To the Board of Overseers of Harvard College: —

Since the report of your Committee, of date October 15, 1902, the Infirmary has amply demonstrated its value for the purpose for which it was intended.

In the first year, 1902–03, there were in the wards of the Infirmary 134 patients and in the private rooms 89 patients, a total of 223 patients for the College year.

In the second year, 1903–04, there were, in the wards, 173 patients and in private rooms 117 patients, a total of 290 patients for the College year.

The duration of Infirmary treatment ranged from one day to two months, with exception of one case of protracted illness, admitted May 15, 1903, and discharged November 11, 1903, necessitating the maintenance of the Infirmary during the three summer months when it would otherwise have been closed.

The value of the Infirmary for the purpose of such preventive treatment as is afforded by rest, seclusion, diet and nursing, is shown by the short duration of stay of many of the patients and by the increasing willingness of the students to resort to the Infirmary for what they need in this respect; this tendency being furthered by the student assessment of four dollars a year, in effect September 29, 1904, under which the student assessed is entitled to two weeks of Infirmary service, during the current year, free of charge.

The more serious cases of illness, requiring prolonged stay in the Infirmary, have been pneumonia, typhoid, and appendicitis, the needs of which have been amply met by the general equipment of the Infirmary and the excellent nursing afforded.

Of the 17 cases of appendicitis, in the first year, 9 came to operation and there was no death; in the second year there were 18 cases, with 10 operations and 2 deaths. In these, as in cases of injury requiring operation, the value of the equipment of the central room, on the first floor, as an operating room was satisfactorily demonstrated.

That the Infirmary is an effective factor in the important work of the Medical Visitor of the College, and that it also commands the approval of the medical profession at large, is evidenced not only by the commendations of its services received by your Committee, but

by the admission statistics, which show that in the first year 48 of the cases in the Infirmary were treated by the College Medical Visitor and 175 by other physicians not connected with the College, while in the second year 77 were treated by the College Medical Visitor and 213 by other physicians.

An important need, in the legitimate work of the Infirmary, to which attention was drawn in the conclusion of the former report of your Committee, has been met by the further generosity of Mr. James Stillman in his additional gift, in the sum of $75,000, for the erection and equipment of a building for the care of such contagious diseases as measles, mumps, scarlet fever and diphtheria.

Heretofore cases of scarlet fever and diphtheria occurring among the students have been admitted to the contagious wards of the Cambridge Hospital, and the Board of Health Hospital, but as no hospital, in either Cambridge or Boston, will admit measles or mumps, it has been necessary to care for such cases among the students in their rooms, for the most part in dormitories, where the inconveniences have been great and the possible comforts, in sickness, few.

The following statistics serve to emphasize the importance of the new provision for student welfare: —

	1895–96	1896–97	1897–98	1898–99	1899–00	1900–01	1901–02	1902–03	1903–04
Measles	21	47	19	48	106	1	42	7	75
Mumps	20	11	95	2	44	66	3	12	28
Scarlet Fever.	2	4	2	0	3	4	2	7	7
Diphtheria....	3	2	5	0	5	12	4	7	12
Total	46	64	121	50	158	83	51	33	122

The yearly average of contagious cases, exclusive of chicken-pox, usually a mild and infrequent disease among students and of which no records were kept at Harvard up to the year 1899, is 80; the ability to avail of the new isolation wards, now nearly completed, will be warmly welcomed.

To adequately carry out the plan for a contagious department of the Infirmary, to remove it sufficiently from the main building, and to install, without the walls of the main building, the laundry facilities required, necessitated the acquisition of additional land; this was effected under the provision of the original agreement by which the land for the main building was acquired.

The new building is Georgian in design, like the older buildings at Harvard, and comports, in its exterior aspect, with that of the

main building, the walls of the first story being of stone and of the upper stories of brick with stone window sills, lintels and corners.

The building is connected with the main Infirmary by a covered passage leading to the main entrance on the first floor. This passage forms a quarter of the curve of a circle; adjacent to it is the laundry, with washers, extractor, washing trays, mangle, folding table, dryer, and ironing tables. The machines are run by shafting connected with an electric motor.

Over the passage is a curved colonnade, roofed over and open at the sides, leading to the main entrance of the second floor.

The first floor of the building contains, besides the laundry above described, toilets, bath-room, locker room, and pantry, an isolation room, linen room, duty room, and bedroom, in addition to which there is a large, well-lighted, well-ventilated ward holding ten beds for patients. This room is open on three sides, giving views over both the river and the park, which borders it on both sides.

The second and third floors are identical in plan with the first, each having the large ward towards Charles River, with the smaller rooms towards Mt. Auburn Street.

The basement is devoted almost wholly to heating and ventilating the building. The steam is brought in from the heating plant in the main building, to heat air which circulates therefrom through the wards above. The attic is used for bath and bed rooms.

Shepley, Rutan & Coolidge, who designed the original building, are also the architects for the new Contagious Ward.

In effect, the Stillman Infirmary, with its recent addition, is not only a complete hospital plant but it is also the most complete plant for its especial purpose.

The payment of its running expenses is at present assured, by a student assessment, by the charges for private rooms, and by the income from a moderate fund "for the care of sick students." Complete as is the building itself, its purpose is still open to endowment and this may be made either in the form of specified funds or by the establishment of memorial beds.

DAVID W. CHEEVER,
GEORGE B. SHATTUCK,
CHARLES F. FOLSOM,
JAMES A. STILLMAN,
PHILIP B. HOWARD,
CLARENCE JOHN BLAKE, *Chairman.*

January 11, 1905.

CLI.

REPORT OF THE COMMITTEE TO VISIT THE LAWRENCE SCIENTIFIC SCHOOL.

To the Board of Overseers of Harvard College: —

Your Committee to visit the Lawrence Scientific School desires to report that it met the Dean and Staff of the School at Cambridge.

It appears that the indefinite reports of changes and possible amalgamation with the Institute of Technology have seriously affected the work and thoughts of both teachers and students. It is to be hoped, for the benefit of all concerned, that this matter may be soon and definitively settled.

Your Committee further hopes that, if any arrangement be made with the Institute of Technology, the Lawrence Scientific School will be maintained in some form for advanced work.

F. L. HIGGINSON,
A. LAWRENCE ROTCH,
JOHN LAWRENCE,
PHILIP STOCKTON.

March 8, 1905.

CLII.

REPORT OF THE COMMITTEE TO VISIT THE MEDICAL SCHOOL.

To the Board of Overseers of Harvard College: —

Your Committee to visit the Medical School met in that building February 15.

In view of the approaching removal of the schools to the new buildings, it recommends that no change, or expense other than for unavoidable repairs be incurred.

Your Committee regrets the serious falling off in the late entering classes.

The conditions for entering are as follows: —

Admission of Students.

"Candidates for admission to this School must present a degree in Arts, Literature, Philosophy, or Science from a recognized college or scientific school, with the exception of such persons, of suitable age and attainments, as may be admitted by a special vote of the Administrative Board in each case.

"The exception above referred to applies only to men who have practically finished a required course for a degree, but, for some good and sufficient reason, such, for instance, as wishing to graduate with their class, prefer waiting until a later period for graduation; or to men who, without such a degree, have acquired an equivalent education and training sufficient to enable them to profit by the instruction offered in the School."

Your Committee suggests that a remedy for it may be found by striking out the second paragraph quoted above, and adopting as liberal a policy as is consistent with the first paragraph.

Your Committee further desires to call attention to the full and careful report made last year and to the fact that no action has been taken on its recommendations.

For the Committee,

F. L. HIGGINSON.

March 8, 1905.

CLIII.

REPORT OF THE COMMITTEE TO VISIT THE DIVINITY SCHOOL.

To the Board of Overseers of Harvard College: —

Your Committee has met the Professors and other Officers of the Divinity School and would report that the School appears to be in a very healthy and satisfactory condition.

The number of students in attendance though somewhat less than last year, when the School was the largest in the history of its existence, is yet well above the average. These students may be classified according to their denominational preferences as follows: —

Unitarian Congregational	13
Trinitarian Congregational	6
Methodist Episcopal	5
Methodist Episcopal, South	3
Baptist	4
Disciples	4
Moravian	1
Lutheran	1
German Evangelical	1
French Protestant	1
Protestant Episcopal	1
	40

Here are eleven denominations represented in a total of forty students, and no one denomination finds itself in a majority. From this it appears that the School is amply justifying its claim to be undenominational in discipline, training, and influence.

In connection with the number of students, which is manifestly small as compared with those who are studying Medicine and Law, it may be well to call attention to the fact that many courses of study given in the Divinity School are open to undergraduates of the College and have attracted considerable attention. Last year, the number of non-Divinity students who elected courses of study in Ethics, Theology, Church History, Old and New Testament, and the History of Religion, as offered by the Divinity School, was 357. The

figures for this year are not at hand, but it may reasonably be assumed that there has been no falling off.

Such a condition of things cannot be looked upon as other than happy and full of promise.

For the Committee,

PAUL REVERE FROTHINGHAM,
Chairman (pro tem.)

April 12, 1905.

CLIV.

REPORTS OF

THE COMMITTEE TO VISIT THE UNIVERSITY MUSEUM

AND

THE COMMITTEE TO VISIT THE MUSEUM OF COMPARATIVE ZOÖLOGY

AND

THE COMMITTEE ON ZOÖLOGY.

To the Board of Overseers of Harvard College: —

The Committee to visit the University Museum, the Museum of Comparative Zoölogy, and the Committee on Zoölogy beg to report through their Chairman, Dr. Cheever.

April 11, Messrs. Hill, Folsom, Gardner, Agassiz, Balch, Pickman, Brewster, and Cheever visited the University Museum and were received by Mr. Alexander Agassiz.

The new and superior mode of displaying the larger mammals attracted their attention, and the display of cut and uncut tourmalines from California excited their admiration.

The sunlight is fading out the best colored birds in the ornithological collection; therefore, as good specimens may never be obtained some years later, Mr. Agassiz suggests that daylight be wholly excluded, and that they be shown by electric light. He also showed the collections in mineralogy lighted by electricity, and the superiority was unquestioned.

The Museum has 1200 feet of window light for workers and investigators, — superior to the research rooms of Europe. The teachers ought to be relieved of pure drudgery and allowed to have time for investigation. Later, Mr. Agassiz proposes to prepare a report, and plans to show what improvements can be made with an endowment.

In the Museum of Comparative Zoölogy, four new men are needed at once as Museum men, not as instructors. There is no money to pay them.

In Zoölogy, courses remain the same, except one by Professor Castle, "On the Natural History of the Domestic Animals." There is no change in teachers; attention is called to Dr. Rand's annual appointment, on a half-salary, or $500 a year.

One hundred and ninety undergraduates attend the instruction in Zoölogy, an increase of 40 students. A small endowment for research is much needed, and any reduction in salaries is disastrous.

For the Committees,

DAVID W. CHEEVER,
Chairman.

April 12, 1905.

CLV.

REPORT OF THE COMMITTEE ON MUSIC.

To the Board of Overseers of Harvard College: —

The Committee for the Department of Music has the honor to report that a number of visits to recitations and lectures have been made by its members during the years since the last report, and that consultations have been had with the instructors.

The Department is growing in numbers and importance, there being this year (approximately) 110 in History of Music, 45 in Harmony, 20 in Counterpoint, 8 in Canon, 10 in Vocal Counterpoint, 25 in Musical Form.

It is unfortunate that the accommodations in Holden Chapel are insufficient, *e.g.*, the division in History of Music has proved too large for the place, there not being seats enough. The course interests many who do not care or know enough to take up the other subjects, and the number of students in it would have to be limited another year, under present conditions.

The Committee approves highly of Professor Paine's recommendation as to another instructor, especially as it would result in the readjustment of the work at present done by Assistant Professor Spalding.

Respectfully submitted for the Committee,

ARTHUR FOOTE,
Chairman.

May 10, 1905.

CLVI.

REPORT OF THE COMMITTEE TO VISIT THE GRAY HERBARIUM.

To the Board of Overseers of Harvard College: —

During the past three years your Committee, appointed to visit the Gray Herbarium, has held one or more meetings annually. At these meetings, which have been attended by about three-fourths of the members of the Committee, detailed reports of the Curator of the Herbarium have been received and discussed. Every member of the Committee has either visited the Herbarium personally or been each year in consultation with the Curator regarding the work and needs of the establishment. Each member has furthermore contributed toward the support of the Herbarium, their gifts being, however, in some instances anonymous.

The Committee sees with satisfaction the considerable growth of the endowment of the Herbarium through the acquisition in recent years of the Asa Gray Professorship Fund, the Gray Memorial Fund, the Robert Charles Billings Fund, and the still more important fund which will result from the legacy of Mrs. Warren B. Potter, formerly a member of this Committee. Until the income from its endowment becomes adequate to the support of the Herbarium, the Committee has adopted with considerable success the plan of issuing an annual circular asking for small gifts for the present use of the Herbarium. These circulars have brought prompt and cordial response from about two hundred donors and have yielded about $1800 yearly.

The Committee approves the methods and aims of the Herbarium Staff and believes that in publication, in the development of the collections and library, in wide correspondence and general usefulness, the activity at the Herbarium has been as great and the quality of the work as high as the financial resources of the establishment rendered possible.

On the other hand, the present quarters of the Gray Herbarium are so congested as to impede the activities of the staff and endanger

the collections. It is a matter for the serious consideration of the friends of the Herbarium to determine the best remedy for this difficulty.

Respectfully submitted for the Committee,

FRANCIS H. PEABODY,
Chairman.

EMILE F. WILLIAMS,
Secretary.

May 10, 1905.

CLVII.

REPORT OF THE COMMITTEE TO VISIT THE FOGG MUSEUM AND THE DEPARTMENT OF FINE ARTS.

To the Board of Overseers of Harvard College: —

The Committee to visit the Fogg Museum and the Department of Fine Arts begs to present, as preliminary to a further report, the following statement addressed to its chairman by two of its members, with an addition thereto by one of them. The other members of the Committee concur in the opinions expressed in these papers, and urge the adoption of the course recommended in them.

C. E. NORTON,
FRANCIS BARTLETT,
EDWARD ROBINSON.

May 10, 1905.

To Professor Charles Eliot Norton, *Chairman*: —

The undersigned, members of the Committee to visit the Fogg Museum and the Department of Fine Arts, after visiting Cambridge and examining the buildings and grounds, in compliance with instructions accompanying their appointment by the Board of Overseers, beg to submit the following statement: —

Fifty years ago Harvard College possessed buildings of simple construction and unpretentious character, built of similar material, of the same style and color, and so located with reference to one another as to present the appearance of a well-ordered group. Harvard College now possesses many buildings of expensive construction but of unrelated architecture and so located with reference to one another as to give an impression of incongruity. Lack of reciprocal arrangement coupled with absence of uniformity in style, color and scale has produced this condition. Each of the buildings erected in recent years has seemed to assert itself and clash with its neighbor, so that, in spite of the architectural excellence of certain of them individually considered, the total effect is disorderly.

The unfortunate results of this condition are obvious. That the College, viewed as a national institution, should present an exterior out of harmony with its high function is unfitting; that the College, viewed in its more intimate relation, should leave in the minds of its graduates a memory of inharmonious surroundings is to be regretted; yet even these drawbacks are small compared with the positive disorderly and lasting influence exerted by such surroundings on the undergraduate mind in its most formative period. In the regular ordering of the intellectual life of its students, in the methodical grouping of the collections contained in its museums and libraries, the University shows its belief that sound teaching rests on order and system. But should not the definite work of the lecture-room, the museum and laboratory be supplemented by proper material environment? In the upbuilding in the minds of its students of those ideals for which the University desires to stand who can overestimate the value of beautiful surroundings, silently but surely instilling their lesson of good order? If order and system are requisite in intellectual work, are they not equally so in those material conditions amidst which the work is done? It should be borne in mind that while only certain of the students enter deeply enough into the intellectual life of the University to reap the full benefit of its training, yet all of them, by the mere fact of their residence in Cambridge, are subjected to the insistent teaching of their material environment. The one pervasive influence, in short, that is common to the lives of all Harvard men is that of the outward aspect of the University.

That the condition outlined above has arisen in spite of the employment by the University of able and experienced architects is proof enough that no good results can be achieved through building operations uncontrolled by a general plan. Beautiful buildings, if inharmonious, will never constitute a beautiful group; and no beauty of general effect will result from the casual work of architects separately employed in the design of buildings bearing no fixed relation to one another in a general scheme. Even a well-meant effort on the part of a thoughtful architect to follow a plan of his own devising for a part of a general scheme, will fail through the employment of an independent successor.

Lack of order in our American cities and universities has been the rule. With a few notable exceptions, such as the city of Washington and the University of Virginia, all of them have developed the evils to be expected from the lack of a systematic plan, and until very recently there has been no sign of better things. However, the last decades of the nineteenth century have made possible a broader

education in America, of which one of the most notable indications is a desire for good order, which has recently expressed itself in a definite movement toward the methodical grouping of public buildings in connection with good settings. Among universities the Johns Hopkins, Chicago, Pennsylvania, California and Stanford, for example, have comprehensive plans for organic growth. Among cities Cleveland, New York, San Francisco and Washington, to mention no others, have plans providing for immediate improvements as well as future development. Each of these universities and cities may thus hope, in the course of time, to possess the higher beauty and convenience of well organized grouping. The desire for a beautiful and practical arrangement has made itself felt at the Capital, where the President has entered actively into the work. Should not Harvard University foster this movement by its own example?

The creation of new buildings and settings worthy to stand as examples of consistent architecture is now made possible through the recent acquisition by the University of large tracts of lands on both sides of the Charles River. Existing conditions in the "Yard" and adjacent territory, while more difficult to treat, are yet susceptible of much improvement at comparatively small cost. The undersigned, therefore, believing that improvement does not come except as the result of a design worked out logically in obedience to an initial governing plan, have the honor to recommend that such a plan be made and adopted by the University.

Respectfully submitted,

D. H. BURNHAM,
F. D. MILLET.

April 26, 1905.

To Professor Charles Eliot Norton, *Chairman:* —

In addition to the joint report of Mr. Burnham and myself which I enclose herewith, I beg to present a brief individual report, not because Mr. Burnham and I do not agree but because we have been able to discuss these matters only through the medium of the mails. His absence in California makes even this now impossible.

We who have been out of College some years always think of Harvard as the group of simple brick structures beginning with Dane Hall and ending with Holworthy, and with University Hall across the Yard as the focus of a partly completed composition. These buildings are to the public exactly what they are to us —

the real Harvard. They were designed with taste and were located in accordance with a plan which evidently contemplated the future development of the group on orderly lines. Within the last four decades the growth of the University has been so rapid and the immediate demand has been so great that all consideration of order, system and plan has been ignored.

From the orderly beginnings in the Yard a disorder has spread and straggled in every direction until the buildings, most of them representing ephemeral fashions in Architecture, suggest in grouping and in detail the competitions of commercial enterprises. They disturb the vision and distract the mind, and some of them are ill-adapted to the uses for which they were intended. A stroll across the enlarged Yard is an object lesson in architectural discord.

While I believe that something could be done to rectify the mistakes of the past, I am sure that the future development is a more important problem. This does not now present great difficulties.

The University expansion will doubtless be to the south; to the river and across it. This extension of University grounds, if properly carried out, will, by the force of a logical design, bring back to the University what it has lost, and establish its high position in art as well as in education.

The natural focus of this extension is the library which, if it be rebuilt and properly located, will dominate, as it ought to dominate, by its character and its position the whole composition. The slope of the land to the river bank and the broad open plain beyond with its background of distant hills offer a wide area particularly suggestive of monumental treatment, admitting of practically unlimited extension. Such a development will carry out on large lines the original intentions of the founders of the University; it will be of great practical advantage in the work of the University, establishing a centre of activity and interest; it will be a good investment, because public taste is rapidly improving and wealth will surely flow to an institution which shows a purpose to meet the public demand for the best there is in art.

If the University recognizes the value of an orderly arrangement of its buildings in a manner which shall give the appropriate impression of a great institution of learning, it will adopt the course which has been thoroughly tested and found effective in various cities of this country and which has long been employed abroad. A commission of experts should be appointed to decide on all questions of taste, and their decision on these points should be final. This

commission should be instructed to select a plan to provide for immediate development strictly in the direction of future accomplishment of a consistent and orderly scheme. The character of the buildings recently erected or now in progress of erection is a cogent reason for the immediate appointment of such a commission.

I have the honor to be, sir,

Yours respectfully,

F. D. MILLET.

CLVIII.

REPORT OF THE COMMITTEE ON GEOLOGY, MINERALOGY, AND PETROGRAPHY.

To the Board of Overseers of Harvard College: —

The Committee met the officers of the Department, in Cambridge, on February 25.

The Mineralogical Museum has, through the kindness of a friend of the Museum, been thoroughly equipped with Nernst electric lamps. The lights illuminate the exhibits most effectively. Many interesting specimens have been given to the Museum during the past year. A very fine loan collection of Tourmalines is now on exhibition.

Since the last report, the further sum of two hundred dollars has been given for the establishment of a meteorological observatory. Sufficient funds are now on hand to begin the work; two nephoscopes of the Blue Hill pattern, and a Richard thermograph and hygrograph have been purchased with the money left by the New England Meteorological Society. Two or three hundred dollars more would purchase a comparatively complete set of instruments.

In the Geological Museum, the allotting of the balance of the construction fund gave the means for installing several exhibition cases. Considerable material has been collected which has not yet been put on exhibition. The survey of the Metropolitan District of Boston, begun in 1900, was completed by students of the advanced field course in geology. A large topographic map has been prepared, showing the entire metropolitan district; on this all the geological records of the past five years have been inscribed in color. This map will be put on exhibition beside the large Boston Model.

The ventilation of the laboratories has been much improved, though in many of the rooms it is still very poor. In the petrographical laboratory Nernst electric lights, with shades and blue glass shields, have been installed at each window, enabling students to work with the microscope late in the afternoon. The equipping of other laboratories with the Nernst light would be of great benefit. The Department was very fortunate in being able to purchase, at a very low price, the entire stock of minerals and rocks of a dealer who was retiring from business. This assures material of excellent quality for the use of students for many years to come.

The Gardner collection of photographs has been increased during the past year; the most noteworthy additions being a set of stereopticon views purchased from Professor Fairbanks, of the University of California, and a collection of 382 slides purchased from the series of the United States Geological Survey.

A plan has been adopted by the geological departments of a number of colleges and universities for the publishing of a "Joint Announcement of Field Courses in Geology," enabling students to take any of these courses and receive credit for them from their own college or university. The "Josiah Dwight Whitney Fund" of five thousand dollars, given through the kindness of Miss Maria Whitney, will provide one scholarship of two hundred dollars or two of one hundred dollars, as circumstances may determine, for the study of field geology or geography during the summer months.

It is unfortunate that the Assistants in charge of laboratory work are often inexperienced men, as it is difficult to get experienced teachers for the small salaries offered. In consequence of this, Professors frequently teach elementary courses in the Laboratories at the expense of their research work. The Committee feel that this condition of affairs is largely due to the continual pressure for expansion from every department of the University, and that it can not be remedied until an advisory committee has been appointed whose duty would be to consider the changes advised by each department, and not leave them, as at present, to the independent action of the Professors. Under the present system each department feels that any economy it may bring about is not a gain for its own department, but often means expansion for some other department; the result being that all departments fear that, unless they put in claims for appropriations in excess of their requirements, their share will go to some department which is more insistent.

Many important papers have been published, as shown by the President's Report.

For the Committee,

R. L. AGASSIZ.

June 28, 1905.

CLIX.

REPORT OF THE COMMITTEE TO VISIT THE BUSSEY INSTITUTION.

To the Board of Overseers of Harvard College: —

The undersigned members of the Committee to visit the Bussey Institution, having performed their duties by a visit to the Institution on May 15, 1905, submit the following report: —

The Committee was gratified to find that the recommendation of a former report, that the large room on the second floor of the main building be divided into two class rooms, has been adopted and carried out. The class rooms thus furnished were much needed and will add greatly to the efficiency of the Institution. The one devoted to microscopic work by the students needs suitable tables, and as these can be furnished at a small expense estimated not to exceed $150, and are almost indispensable for convenient and satisfactory work with the microscopes, the Committee earnestly recommends that they be provided as soon as possible.

Slight repairs seem necessary in the wooden portion of the old part of the greenhouse, especially painting of the woodwork to preserve the structure, and should be attended to at once in the interest of true economy.

Some method of aiding capable and deserving students by temporary loans, such as are now offered to students of the academic department by the Trustees of the Loan Fund, is much to be desired. Some of the best and most promising students have been compelled to give up their courses through lack of funds to meet their expenses.

FRANCIS HENRY APPLETON,
WALTER C. BAYLIES,
JOHN LOWELL,
MOORFIELD STOREY,
FRANCIS SHAW,
AUGUSTIN H. PARKER,
C. MINOT WELD,
WILLIAM S. HALL.

June 28, 1905.

CLX.

REPORT OF THE COMMITTEE TO VISIT THE BOTANIC GARDEN AND BOTANICAL MUSEUM.

To the Board of Overseers of Harvard College: —

The Committee to visit the Botanic Garden and Botanical Museum have the honor to submit the following report: —

The individual members of the Committee have visited the establishment at various times during the academic year, and they have also held a joint meeting at the Garden. The different parts of the Garden and Museum were found to be in excellent condition.

The absolutely necessary repairs have been made in the older greenhouses, and the work was seen to be wholly satisfactory. Owing to the severity of the long winter, the expenses attending the heating of the large range of houses have been greater than usual. Moreover, there have been heavy outlays connected with the vigorous fight against the gipsy and brown-tailed moths.

Although the present is not a favorable time for undertaking a general subscription to increase the funds of the Garden, the members of the Committee are of opinion that some measures should be considered at an early day for bringing the total funds up to the point where annual gifts need not to be asked for, as at present.

Your Committee heard from Mr. E. F. Atkins, who has supplied the funds for the Harvard Experiment Station in Cuba, that he is perfectly satisfied with the management up to date. This enterprise promises to be of considerable use to the people of Cuba, and indirectly of some advantage to the students in the University who may wish to see experimental work in tropical regions.

The Committee are glad to commend again the very skilful and economical administration of the Garden by Doctor Goodale and his assistants.

For the Committee,

WILLIAM A. BANCROFT.

June 28, 1905.

CLXI.

REPORT OF THE COMMITTEE ON BOTANY.

To the Board of Overseers of Harvard College: —

During the past winter and spring the various courses in Phanerogamic and Cryptogamic Botany have been visited, and entire satisfaction is felt with the work done. In addition, the Committee have had a meeting with the Department, at which meeting the situation was thoroughly discussed. The following suggestions are respectfully submitted with reference to the different electives: —

Botany 1. — Professor Goodale.

This is a general introduction to the subject of Botany and has been usually taken by about 150 men. This year, however, owing to marked improvements in the ventilation and lighting of the Botanical Lecture Room, it was possible to admit to the course a much larger number of students than ever before. More than 250 men were in attendance. But it is plain that this great increase in the number of students taking Botany 1 calls for an immediate change in the Laboratory assigned to the course, and this brings us to what your Committee regard as a most urgent need of the Department. Rooms 13 and 13 a in the Museum, where laboratory work is carried on, have no system of ventilation, while a few gas jets supply all the artificial light. As at present equipped, the rooms will accommodate at one time but 35 and 30 students respectively, as the men are obliged to use tables on the side of the room next to the windows, the rest of the room being practically useless.

An electric system of heating, ventilating and lighting, to which reference has been made above, as employed with success in the Botanical Lecture Room, is sadly needed and most earnestly recommended. By this method 100 students could be seated in the larger room, leaving the smaller one to be used for other necessary purposes. By enabling the larger number of students to use the Laboratory at one time, economies could be effected, both as regards decreasing the number of Laboratory sections and in saving the time of the assistants: the gain is obvious. The cost of these changes, we are told,

would be in the neighborhood of $3000. Two small rooms, moreover, in another part of the building, where graduate work is carried on, should be provided with the same equipment to produce the best results. The estimate for these changes in the two smaller rooms is said to be about $800 to $1000.

Botany 2. — Professor Thaxter.

This course is now taken by a large number of men as a fitting introduction to the use of the microscope in advanced botanical research, and as a preparation for work in the Medical School.

During the next academic year the Department will lose the services of Professor Thaxter, who is to be away on leave of absence to pursue botanical investigations in South America. Arrangements have happily been made by which his courses are to be taken by Professor Jeffrey.

Botany 3. — Professor Jeffrey.

This course is now divided into halves; this division permitting wider scope and sharp distinction between the two. Each can be taken independently of the other. In this connection the Committee would call attention to the increased use of the lantern in these courses, and to the admirable slides prepared and used by Professor Jeffrey in illustrating his lectures.

Botany 5.

This course is conducted by Professor Goodale and Mr. Ames. It affords opportunity for those interested in Economic Botany, and attention is called to the increased equipment and added facilities offered those desirous of pursuing this branch of the subject.

The Committee wish to call especial attention to the fact that for some years past it has been possible for students interested in practical work in Systematic Botany to receive the instruction they desire, namely, in Botany 7 and Botany 20*c*, both given at the Gray Herbarium, the former by Mr. Fernald, the latter by Professor Robinson.

The members of the Committee can testify from personal knowledge and investigation that such a course as Botany 7 would have been of the greatest benefit to them as students if it had been offered by the College in earlier years, and they regard it as of the highest value to students interested in Botany at the present time. It should

be borne in mind that many botanists are mainly interested in systematic work, and therefore it seems but fair and just for the College to provide for such instruction. Your Committee, to their surprise, however, have been informed that no adequate pecuniary provision is made by the College for the maintenance of this important course. If this is the case, we respectfully but earnestly recommend that proper support be provided to maintain this course permanently.

In view of the increase and excellence in the courses offered by the Department during the past years in other branches of Botany, your Committee feel all the more justified in making this recommendation.

Botany 20*c*, on Taxonomy of Phanerogams, also recently offered, provides in this direction ample facility for advanced students. Emphasis has been laid upon these courses, namely, Botany 7 and Botany 20*c*, for they have been but recently offered, and they seem to the Committee to supply a long-felt want on the part of those who desire to obtain an accurate knowledge of flowering plants as regards their systematic relation and distribution, and who may not wish to take the courses more fitted for professional work.

One of the most important changes of recent years is the establishment of two half-courses, namely, Botany 8 and 9, which deal with the morphology of the higher Cryptogams and Gymnosperms: plants which lie along the border line between the flowering and flowerless plants.

The omission of Botany 11, Botanical Geography, during the year 1905–6, owing to the loss of Dr. Greenman as instructor, which they sincerely regret, seems to your Committee a great misfortune. A course of this character should be called for at the present time, and cannot with any advantage be dropped from the programme of the Department.

While it is a matter of constant regret that Professor Farlow has practically ceased to give instruction in the Department, it is gratifying to know that he still permits advanced students to consult him when they need assistance.

As stated before, the various courses for both undergraduates and graduates in Phanerogamic and Cryptogamic Botany have been carefully inspected by your Committee, and entire satisfaction is felt with both the elementary and advanced work.

The advanced investigations carried on by graduate students have also been examined by your Committee, and the results indicate earnestness and zeal on the part of the students, and skilful and able supervision and guidance on the part of the instructors. In a

word, from the elementary to the most advanced courses, your Committee have been impressed by the steadfastness of purpose and devotion to their work on the part of the students, and generous aid and coöperation on the part of the instructors.

Respectfully submitted for the Committee,

NATHANIEL C. NASH,
Chairman.

JUNE 28, 1905.

CLXII.

REPORT OF THE COMMITTEE ON FRENCH.

To the Board of Overseers of Harvard College: —

The French Department is a large and important one, composed this year of fifteen professors and instructors, and followed by nine hundred and eleven men in thirty-two divisions. It is, in the opinion of your Visiting Committee, working harmoniously, and making the best of the resources at its command.

For the greater efficiency of the Department, the Committee sees the need of one or more permanent professors or instructors, who should be French, men thoroughly competent and of distinct attainments, and chosen with great care, to conduct courses in the French language. They should also be qualified to give public lectures or readings. This last year, out of fifteen professors and instructors, only one was a Frenchman, giving a full course; and during the coming year but one teacher will conduct his courses in French. That the French language is not more employed in the teaching of French is unfortunate, and points to a defect in the present system which both the Department and your Committee would like to see remedied by the importation of Frenchmen, to speak in their own tongue, and to impart that peculiar interest which seems to be the special gift of their race.

The Committee continues to be fully alive to the necessity of enlarging the means for giving students a better working knowledge of the French language, so that men of otherwise good attainments (who have already acquired a good constructive knowledge of the language) may be able to make use of it, without finding themselves helpless when they are thrown upon their own resources. The Committee notes with satisfaction that the courses in composition and conversation are to be put upon a more satisfactory basis in the next year. Then the exchange of students with the Sorbonne, through Mr. Hyde, has given a further, although limited, opportunity for the practical use of the French language, and has done good service in that respect.

The Committee does not recommend enlarging the system of elementary instruction by young graduates. In its opinion, the

elementary courses would be conducted with more dignity and success if the majority of teachers were men of more experience. It has been easy to consider that the elementary courses could get along with teachers of minor abilities, that almost any young instructor was good enough, and small salaries quite sufficient for the purpose; but the result of this policy has been to keep teachers of ability — who naturally command fairly good salaries — out of the elementary courses, to the disadvantage of the students, to whom able teachers are denied just when they are most needed.

It is interesting to note that the Department is attracting to the post-graduate courses large numbers of the best men from other universities, while, at the same time, very few of our Harvard graduates are following them.

The Visiting Committee, in summing up the needs of the Department, finds: —

First, that one or more Frenchmen are needed as teachers and lecturers.

Secondly, that the grade of teachers in the elementary classes should be raised.

Respectfully submitted,

J. TEMPLEMAN COOLIDGE, Jr.,
GORDON ABBOTT,
HOWARD GARDINER CUSHING,
CHARLES J. BONAPARTE,
FRANCIS McLENNAN,
JAMES H. HYDE,
THOMAS RUSSELL SULLIVAN.

June 28, 1905.

CLXIII.

REPORT OF THE COMMITTEE ON ENGLISH LITERATURE.

I. REPORT OF THE COMMITTEE ON ENGLISH LITERATURE

To the Board of Overseers of Harvard College: —

Your Committee met the Professors and Instructors in English Literature, at University Hall, Cambridge, on February 20, 1905. Some members of the Committee have visited class-room exercises. They recognize, however, that casual visits of this character afford no basis for the criticism of the methods now followed, and that conferences with the members of the Department are really more valuable in giving a survey of the Department as a whole. In order to be able to criticize intelligently the methods of the numerous courses in English Literature, it would be necessary to attend the lectures more frequently and continuously than is possible for any but persons with considerable leisure.

It was made clear to the Committee that the scope of the Department is limited and its efficiency impaired by the reduction of its maintenance fund. This is about $9,800 less than last year for the whole Department of English, including the courses in English Composition and Rhetoric, which are under the supervision of another Committee of this Board. The practical result of this economy has been the reduction in the number of courses provided and a curtailment in the force of assistants requisite for proper supervision of the men in the large courses. For instance, the omission of Course 41 — History of English Literature from the Anglo-Saxon Period to the Present — cuts off seventy-five to one hundred upper classmen from the advantages of a course designed to be "a comprehensive introduction of a later, more detailed study of English Literature as a whole in any separate period or in the work of any one author." The most serious effects of this retrenchment are likely to be felt in the Graduate School, where the students in advanced subjects have difficulty in finding a sufficient number of English courses owing to the omission of special courses like 44 — Chaucer — Study of Special Topics. This particular course, omitted in 1904–05, is to be given in 1905–06, but others will be omitted, owing to the fact that additional burdens have been thrown on the Professors capable of giving them

by the reduction in the numbers of the staff. The reputation of the Harvard English Department throughout the country depends largely on the facilities it offers to Graduate Students. These students are a shifting quantity, quickly responsive to increased excellence or to deterioration in the courses offered. No English department can plan simply to hold its own without losing reputation; its courses must be constantly strengthened in order to hold the naturally migratory graduates.

In the year 1904–05 it appears from the official figures of the English Department that the courses in Literature and Composition were attended by over 2,131 students, of whom 250 were graduates; though this needs the qualification that the names of some men appear in more than one course. These statistics show the large size of the Department. The largest attendance in any one course was in English A — Rhetoric and English Composition — prescribed for Freshmen and for first-year students in the Scientific School. 569 men attended this course, and it is here that the curtailment in the force of assistants requisite for the proper supervision of daily work is most severely felt. As has been stated, the Composition Courses are under another Visiting Committee of this Board, but we wish to make the point that the economy works injury to the Literature side of the Department in the following way: The system of frequent conferences between instructors and students as a supplement to the lecture system is excellent; but it entails a vast number of hours for the individual instructor who conducts the conferences and reads the themes. Were a few additional instructors for English A (at $1000 apiece) engaged, not only would that course be made more efficient, but it would allow these same instructors, who are often highly trained scholars, to give one course each for advanced students, thus enriching the scope and enlarging the variety of the graduate courses. It seems highly desirable that the energies of those competent to promote advanced scholarship should not be overtaxed by an excess of employment on the more primary courses. If Harvard is to maintain its prestige as the leading American University it will be by virtue of its enlightened scholarship rather than by mere numbers, and even a temporary condition of affairs which interferes with progress is unfortunate. In connection with the Graduate School may be mentioned the need of a Publication Department similar to that of Columbia College, through which contributions of note could be preserved and issued in permanent form, — not a very serious item of expense and certainly desirable. During the year Professor Wendell has been absent in

Europe, and Dr. H. de W. Fuller has become a member of the Department. We beg to report that in our opinion the Department is at present undermanned, to the detriment of the students in the large courses and of the progress of the Graduate School.

For the Committee,

ROBERT GRANT,
HAMMOND LAMONT,
BLISS PERRY.

September 27, 1905.

II. REPORT OF THE COMMITTEE ON REPORTS AND RESOLUTIONS

To the Board of Overseers of Harvard College: —

The Committee on Reports and Resolutions, to which, at the last meeting of the Board, was referred the Report of the Committee on English Literature, returns the same with the recommendation that it be printed, together with the report now submitted.

The Report under consideration seems deserving of particular attention inasmuch as it presents a concrete case arising out of what cannot but be considered a most important question of administrative policy.

The following passages appeared in the Report of the President of the University for the academic year 1902–03: —

"The financial result of the year was a deficit of $40,403.07 in the combined account of the College, Scientific School, Graduate School, and Library. . . . The larger part of the new expenditure [of the year] went to increase the amount of instruction offered; but a significant portion was used to improve the instruction already offered, particularly in the elementary courses resorted to by large numbers of students.

"It is the clear duty of the Corporation to repair, as soon as possible, the mistake they made in the too large increase of the salary list for the year 1902–03. . . . This reduction can be made by diminishing the number of instructors and assistants annually appointed. There will result some diminution in the number of courses of instruction offered, and some redistribution of work among professors and instructors holding permanent appointments; but, in general, the reductions can be made without seriously affecting the interests of any considerable number of the undergraduates" (pp. 48, 50).

In a Report of a special Committee of the Faculty of Arts and Sciences, appointed under a vote of that Faculty of May 27, 1902,

it was stated that the responsibility of seeing that the work of the students taking the academic courses is properly done "must rest chiefly with the assistants, who come into more immediate contact with the students. As the University is now organized, these assistants are necessarily young men, and therefore without experience in teaching. The Committee feels the extreme importance of selecting the very best available men, and the false economy in failure to get them by reason of insufficient salaries. Some of the men are now as good as could be desired, but even these have charge of too many students. The need of a large number of competent assistants is felt by instructors and students alike." (*Harvard Graduates' Magazine* for June, 1904, Vol. 12, p. 616.)

The Report of the Committee on English Literature herewith returned forcibly illustrates the results of the policy of economy outlined in the above extract from the Annual Report of the President for 1902–03. It would appear that the English Department of the University has been seriously hampered in its work of instruction as the result of the effort deemed necessary to effect economies in that Department to the amount of $9,800; this being the sum which that Department may be considered as having contributed towards meeting the deficit of the year 1902–03.

Under existing circumstances, and with the information at its disposal, the Committee on Reports and Resolutions is not prepared to submit any form of vote, or recommend any specific action of the Board in this connection. None the less, it seems proper that special attention should be called to the report now returned. It is important and timely as accentuating the question of policy involved in the extracts above quoted, to wit: whether, as matter of educational policy, it is more desirable that the necessary economies should be effected, if economies must be effected, in what may be considered the elementary and fundamental studies of the University, attended, in the case of the English Department, by no less than 2,131 students; or in the large number of special courses, of which examples could easily be given, attended by but few students, or, in some cases, by single students only. Referring to the experience and policy of Yale, under similar circumstances, it has been stated that, of a total number of 181 courses, it was there found that 70 were taken by fewer than ten students each; 36 by fewer than five; 8 by fewer than two; and 11 by a single student each only. Under these circumstances, the total number of courses in the Yale programme was, as a measure of necessary retrenchment, reduced from 263 to 249, and of the 249 remaining courses it was stated that

"between 50 and 60 would be cut out unless a sufficient number of students elected them to make it worth while giving them."

The present Committee does not undertake to discuss the question as to whether, under conditions exacting some measure of retrenchment, it is most desirable to impair the efficiency of the fundamental courses of instruction, pursued by large numbers of students, or to effect the necessary economies by reducing the number of special courses. It does, however, think that, in view of the statements in the report herewith returned, the question of policy involved should be clearly understood and carefully considered.

All of which is respectfully submitted.

By order of the Committee,

CHARLES F. ADAMS,
Chairman.

October 11, 1905.

CLXIV.

REPORT OF THE COMMITTEE ON REPORTS AND RESOLUTIONS.

To the Board of Overseers of Harvard College: —

The Committee on Reports and Resolutions respectfully submits the following report: —

During the last academic year, reports have been received from the following visiting committees: —

1. To visit the Peabody Museum of Archaeology and Ethnology, Nov. 15, 1904.
2. To visit the Stillman Infirmary, Jan. 11, 1905.
3. To visit the Lawrence Scientific School, March 8, 1905.
4. To visit the Medical School, March 8, 1905.
5. To visit the Divinity School, April 12, 1905.
6. To visit the University Museum, to visit the Museum of Comparative Zoölogy, and on Zoölogy, April 12, 1905.
7. On the Course in Music, May 10, 1905.
8. To visit the Gray Herbarium, May 10, 1905.
9. To visit the Fogg Museum and the Department of Fine Arts, May 10, 1905.
10. On the Course in Geology, Mineralogy and Petrography, June 28, 1905.
11. To visit the Bussey Institution, June 28, 1905.
12. To visit the Botanic Garden and Botanical Museum, June 28, 1905.
13. On the Course in Botany, June 28, 1905.
14. On the Course in French, June 28, 1905.

Under the provisions of Section 28 of the revised (1902) Rules and Bylaws of the Board, the several visiting committees are instructed to report in writing at least once in three years. The following have apparently failed to meet this requirement: —

1. Committee on Classics. The omission of a report on the part of this committee has been explained by the Chairman. A report is now under consideration, and may be looked for during the current year.

2. Committee on Engineering. This is one of the Courses of the Lawrence Scientific School. The visiting committee is large, and has been appointed after careful consideration and in accordance with the suggestions of Professor Hollis, the head of the department, as to its requirements. The omission of a report has been due to causes in no way affecting the efficiency of the committee, or the interest of its members in the Course.

3. Committee on Government. No reports have been received during the year from this committee. A report from it on the very interesting question of the amount of time given by the instructors of the University to administrative duties is in course of preparation, and may be looked for during the current year.

4. No report has been received from the Committee on Semitic Languages. The interest taken by this committee in the Course is well known, and is evinced in the Semitic Museum.

5. No report has been received from the Committee on Mathematics.

6. The Committee on Philosophy has made no report since November, 1896. Nevertheless, the members of the present committee have evinced much interest in the Course, and their labors in connection with it have been of marked value.

7. Committee on Composition and Rhetoric. This committee has made no report since June, 1897. When that report was made, however, it was the final report of a series of exceptionally elaborate character, and it was then understood that no further reports would be made by the committee until the changes in the Course of Instruction at that time initiated had been allowed to work their results.

8. The last report of the Committee to visit the Chemical Laboratory was made in 1900. It is in the judgment of the Committee on Reports and Resolutions highly desirable that a report on this department should be made during the current year. It is proposed to correspond with the committee with that end in view.

9. Committee on Physical Training, Athletic Sports and Sanitary Condition of all Buildings. No report from this committee has been received since early in 1901. The chairman of this committee, Mr. Robert Bacon, has, during the last year, been much interested in other movements for the benefit of the University. His connection with the national State Department will, during the current year, naturally prevent his giving that attention to the duties of this committee which would be desirable. A change in the working

organization of the committee is, therefore, under consideration, and will probably be effected at an early date.

10. The last report of the Committee on Germanic Languages and Literatures was made in 1901. Meanwhile, the committee is most efficient, and has taken active interest in the Course.

11. Committee on Mining and Metallurgy. The last report of this committee also was received in 1901. The chairman of the committee, Col. John Hays Hammond, is a gentleman actively connected with various large interests which necessarily absorb his attention. Nevertheless, it is understood he is now engaged in a movement for the establishment of a Summer School of Mining and Metallurgy, of which Harvard, in connection with other institutions, will enjoy the full benefit. In view of this possible result, the presentation of a formal report is of minor importance.

12. No report from the Committee to visit the Observatory has been received since January, 1902.

13. No report from the Committee to visit the Arnold Arboretum has been received since May, 1902.

14. No report on the Course in Ancient History, Mediaeval History and Roman Law has been received since June, 1902. In relation to this, also, the Committee on Reports and Resolutions is in correspondence with the chairman of the visiting committee.

The Committee has to report a most regrettable loss, both to the committees on which he had consented to serve and to the University at large, through the death of Francis H. Peabody. Though not himself an alumnus, Mr. Peabody was one of those true, as well as numerous, friends of Harvard who, from outside the family circle, as it were, have so often given evidence of their interest in its work. Serving for some years as a member, and an active and interested member, of the Committee to visit the Observatory, Mr. Peabody was also Chairman of the Committee to visit the Gray Herbarium. In this connection, and in view of the extremely valuable services thus rendered by Mr. Peabody, the Committee submits the following tribute received by it from the head of the last named department: —

"From 1898 until his death the late Francis H. Peabody served on the Overseers' Committee to visit the Gray Herbarium, and for six years he was chairman of this committee. The period of Mr. Peabody's service happened to coincide with a very critical period in the history of the Herbarium. Dr. Gray's wide scientific activity and international reputation had raised the establishment to a prominence highly creditable to the University. Its reputation brought it a wide correspondence and imposed much scientific work,

which could only be carried on by a highly trained staff. How the collections and library of the Herbarium were to be developed and its reputation for copious and critical scientific publication maintained, with so slight an endowment as $20,000, was the serious question which confronted both the committee and the staff. A vigorous effort to secure further endowment was initiated and a proof of its considerable success is seen in the Gray Memorial Fund, the Asa Gray Professorship Fund, the R. C. Billings Fund, and the Mrs. W. B. Potter Fund.

"Until adequate endowment could be secured, it was obvious that the Gray Herbarium would have to be supported, if at all, by gifts for present use, and no small amount of the committee's attention had to be directed towards this need.

"The committee held several meetings each year and, notwithstanding the pressure of his many business cares, Mr. Peabody never once failed to attend these meetings. Although disclaiming any technical knowledge of botany, he took a very intelligent interest in the scientific work carried on at the Herbarium, and on many occasions made valuable suggestions regarding it. His influence on the committee was great. Not merely his prominence in financial circles, but his wide culture and great courtesy, made men glad to be associated with him and serve under his chairmanship. When it was a question of giving, his ready example had great effect. The great difficulty of filling Mr. Peabody's place is one of the strongest proofs of his unusual qualities."

In closing, the present Committee desires again to call attention to the fact that, in almost every case, the efficiency of a visiting committee, whether of a Department or a Course of Instruction, depends upon the activity of the chairman, and his interest in the Department or Course. The Rules of the Board prescribe not only that the visiting committees shall report in writing at least once in three years, but that each committee shall hold early in the academic year at least one meeting with all the professors and assistant professors in the Department or Course of Instruction such committee is appointed to visit, in order to receive suggestions, inquire into defects and needs, hear complaints, and give encouragement and counsel. The apparatus, libraries, and scientific collections belonging to the several departments of the University shall, it is also prescribed, be examined and reported on by the committees appointed to visit said departments respectively.

While the system of visiting committees of the Board now in use leads to results fairly satisfactory, it is none the less obvious that even better results would be desirable, and could easily be obtained. It has been repeatedly pointed out by this Committee that the organization of each visiting committee is in its own hands. The

member first named ordinarily acts as chairman; but, in case he feels that, from absence, or other and more pressing calls upon his time and thought, he cannot efficiently perform the work of chairman, it is for him so to advise his associates, and it is then within the province of the committee to select as chairman another of its members. The end in view is obvious, — an intelligent supervision of the Department or Course, affording a channel of sympathetic communication between it and that element of the community interested in its efficiency and development.

In accordance with the vote of the Board of November 28, 1900, a schedule of those recommended to compose the Visiting Committees for the several Departments and Courses of Instruction of the University during the current academic year, is herewith submitted for approval.

By order of the Committee,

CHARLES F. ADAMS,
Chairman.

Boston, October 27, 1905.

COMMITTEES APPOINTED BY THE BOARD OF OVERSEERS.

1906.

ON ELECTIONS.

Moorfield Storey,
James J. Storrow,
Stephen M. Weld,
William Caleb Loring,
Edmund Wetmore.

ON REPORTS AND RESOLUTIONS.

Charles F. Adams,
Edwin P. Seaver,
Winslow Warren,
Charles E. Norton,
Francis L. Higginson,
Moses Williams,
Louis A. Frothingham.

ON DEPARTMENTS.

To visit the Divinity School.

Paul R. Frothingham,
James DeNormandie,
Archibald M. Howe,
Daniel Merriman,
Horace S. Sears,
Arthur S. Johnson,
Francis H. Rowley.

To visit the Law School.

William C. Loring,
James T. Mitchell,
Edmund Wetmore,
Louis D. Brandeis,
Joseph B. Warner,
George Putnam.

To visit the Medical and Dental Schools.

David W. Cheever,
George B. Shattuck,
Charles F. Folsom,
Alexander Cochrane,
Edmund D. Codman,
William Sturgis Bigelow,
Henry H. Sprague,
Luther D. Shepard,
Henry Saltonstall Howe,
George F. Fabyan.

To visit the Bussey Institution.

Francis H. Appleton,
Moorfield Storey,
J. Arthur Beebe,
Walter C. Baylies,
C. Minot Weld,
Francis Shaw,
John Lowell,
Carroll Dunham,
Augustin H. Parker.

To visit the Library.

Francis R. Appleton,
Samuel A. Green,
Charles C. Smith,
Francis Shaw,
Gardiner M. Lane,
William R. Thayer,
J. Randolph Coolidge, Jr.,
Clement W. Andrews,
James Loeb,
Lawrence Minot.

To visit the Observatory.

Edwin P. Seaver,
Henry S. Huidekoper,
Charles S. Fairchild,
Simon Newcomb,
Robert Treat Paine,
Charles F. Choate,
Charles P. Bowditch,
George I. Alden,
Anna P. Draper (Mrs. Henry Draper),
George R. Agassiz,
Elihu Thomson.

To visit the Botanic Garden and Botanical Museum.

Frederic A. Delano,
David Pingree,
Nathaniel C. Nash,
Oliver Ames,
Elliot C. Lee,
Mary Lee Ware (Miss),
Edwin F. Atkins,
Arthur F. Estabrook,
Walter Hunnewell,
William Powell Wilson.

To visit the Gray Herbarium.

Moses Williams,
Frederic A. Delano,
George G. Kennedy,
Nathaniel T. Kidder,
Emile F. Williams,
Walter Deane,
George W. Hammond,
George R. White,
John E. Thayer,
Joseph R. Leeson,
Mrs. John L. Gardner.

To visit the University Museum.

David W. Cheever,
Augustus Hemenway,
Samuel Hill,
Charles F. Folsom,
George P. Gardner,
Rodolphe L. Agassiz,
Francis Noyes Balch,
Henry S. Hunnewell.

To visit the Museum of Comparative Zoölogy.

David W. Cheever,
Charles F. Folsom,
Louis Cabot,
Dudley L. Pickman,
William Brewster,
John E. Thayer.

To visit the Peabody Museum.

Augustus Hemenway,
Samuel Hill,
Charles P. Bowditch,
Henry W. Haynes,
Jesse W. Fewkes,
Clarence J. Blake,
Clarence B. Moore,
Elliot C. Lee,
Charles Peabody.

To visit the Arnold Arboretum.

Stephen M. Weld,
Augustus Hemenway,
Walter Hunnewell,
Charles E. Stratton,
Mary S. Ames (Miss),
Abby A. Bradley (Miss),
Nathan Matthews, Jr.,
John E. Thayer,
Frank G. Webster,
Frederick S. Moseley.

To visit the Fogg Museum and Department of Fine Arts.

Charles E. Norton,
Samuel D. Warren,
Francis Bartlett,
Daniel H. Burnham,
Frank D. Millet,
Edward Robinson.

To visit the Lawrence Scientific School.

Henry S. Huidekoper,
Francis R. Appleton,
Erasmus D. Leavitt,
John Lawrence,
Abbott Lawrence Rotch,
Charles H. Manning,
J. J. Myers,
Philip Stockton.

To visit the Jefferson Physical Laboratory and Department of Physics.

Abbott Lawrence Rotch,
Samuel Hill,
T. Jefferson Coolidge,
Elihu Thomson,
Erasmus D. Leavitt,
Frederick P. Fish,
Charles Proteus Steinmetz.

To visit the Chemical Laboratory.

David W. Cheever,
Edward D. Pearce,
Charles F. Folsom,
Wolcott Gibbs,
Samuel Cabot,
Edward Mallinckrodt,
Clifford Richardson,
James M. Crafts,
Joseph Wharton.

To visit the Stillman Infirmary.

Clarence J. Blake,
David W. Cheever,
Augustus Hemenway,
George B. Shattuck,
Henry S. Huidekoper,
Charles F. Folsom,
James A. Stillman,
Philip B. Howard.

ON PHYSICAL TRAINING, ATHLETIC SPORTS, AND SANITARY CONDITION OF ALL BUILDINGS.

Robert Bacon,
Francis L. Higginson,
Louis A. Frothingham,
Edward D. Brandegee,
Robert F. Clark,
Edwin Farnham,
Maurice H. Richardson,
William Hooper,
Clarence J. Blake,
Samuel H. Durgin.

ON THE ADMINISTRATION OF THE UNIVERSITY CHAPEL.

George A. Gordon,
William Lawrence,
Samuel M. Crothers,
George Wigglesworth,
Roland W. Boyden,
William DeWitt Hyde.

ON THE TREASURER'S ACCOUNTS.

Moses Williams,
Stephen M. Weld,
Samuel Hill,
William C. Endicott,
Gordon Abbott,
Grafton St.L. Abbott,
Allan Forbes,
Arthur Lyman,
Richard C. Storey,
John L. Saltonstall.

FOR THE COLLEGE.

ON GOVERNMENT.

Moorfield Storey,
William Lawrence,
Robert Grant,
Edwin P. Seaver,
Winslow Warren,
Paul R. Frothingham,
Gardiner M. Lane,
Charles C. Jackson.

FOR THE COURSES OF INSTRUCTION.

ON THE SEMITIC LANGUAGES.

Jacob H. Schiff, Isidor Straus, George Wigglesworth.

ON INDIC PHILOLOGY.

Edward H. Hall, A. V. Williams Jackson, William Sturgis Bigelow.

ON THE CLASSICS.

Gardiner M. Lane, Babson S. Ladd, Henry B. Chapin,
William W. Goodwin, James Loeb, Prentiss Cummings,
W. Amory Gardner.

ON ENGLISH LITERATURE.

Robert Grant, Samuel M. Crothers, Bliss Perry,
Hammond Lamont, William R. Thayer.

ON COMPOSITION AND RHETORIC.

Charles F. Adams, George R. Nutter, Edward S. Martin,
Hammond Lamont.

ON GERMANIC LANGUAGES AND LITERATURES.

Henry W. Putnam, Louis Prang, Frederick P. Fish,
Clement S. Houghton, Heinrich Conried, George A. Bartlett,
Otto H. Kahn.

ON FRENCH.

J. Templeman Coolidge, Jr., T. Russell Sullivan, Howard G. Cushing,
James H. Hyde, Gordon Abbott, Francis McLennan.

ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY.

George B. Shattuck, J. Randolph Coolidge, James Geddes, Jr.,
William R. Thayer, William B. de las Casas.

ON ANCIENT HISTORY, MEDIAEVAL HISTORY, AND ROMAN LAW.

John Noble, James T. Mitchell, Roger F. Sturgis,
Arthur P. Stone.

ON MODERN HISTORY AND INTERNATIONAL LAW.

James F. Rhodes. William F. Wharton, William G. Peckham,
William R. Thayer.

ON POLITICAL ECONOMY.

Arthur T. Lyman, Charles S. Fairchild, Horace E. Deming,
John F. Moors. J. Wells Farley.

ON PHILOSOPHY.

George B. Dorr. Richard H. Dana, William R. Warren,
Richard C. Cabot, Reginald C. Robbins, Joseph Lee.

ON EDUCATION.

James J. Storrow, John F. Moors, Grafton D. Cushing,
Edwin P. Seaver. William Taggard Piper, Frederic Cabot.

ON ARCHITECTURE.

C. Howard Walker, R. Clipston Sturgis, Edmund C. Tarbell,
Holker Abbott.

ON MUSIC.

Arthur Foote, John K. Paine, Edward B. Hill,
Horatio A. Lamb. Percy L. Atherton, George A. Burdett.

ON MATHEMATICS.

Seth C. Chandler, William Lowell Putnam.

ON ENGINEERING.

Joseph R. Worcester, Charles H. Manning, Charles C. Schneider,
James J. Storrow, Frederick P. Fish, Edwin W. Rice, Jr.,
Edmund A. Stanley Clark.

ON BOTANY.

Nathaniel C. Nash, George G. Kennedy, Walter Deane,
Edward L. Rand.

ON ZOÖLOGY.

David W. Cheever, Charles F. Folsom, John E. Thayer,
William Brewster. Walter Faxon, John C. Phillips.

ON GEOLOGY, MINERALOGY, AND PETROGRAPHY.

Rodolphe L. Agassiz, George P. Gardner, Raphael Pumpelly,
William Sturgis Bigelow, William E. C. Eustis.

ON MINING AND METALLURGY.

John Hays Hammond, Quincy A. Shaw, Jr., Hennen Jennings,
Charles P. Perin, Frank H. Taylor, Benjamin B. Thayer,
R. Alexander F. Penrose, Jr., Edgar C. Felton, Albert F. Holden.

CLXV.

REPORT OF THE COMMITTEE ON PHYSICAL TRAINING, ATHLETIC SPORTS, AND SANITARY CONDITION OF ALL BUILDINGS.

To the Board of Overseers of Harvard College: —

Your Committee considers the game of football as at present played essentially bad in every respect.

The method of formation absolutely encourages trickery and foul play. It is very difficult to see all that is done, even by the most careful and sharpest-eyed umpire, but the results are seen in many serious and even fatal accidents. It is nearly impossible to line up twenty-two powerful and aggressive young men opposite each other and not have some one lose his self-control and do what is wrong. Cases often occur when foul play is deliberately made in order to gain some advantage at a critical moment, the player doing it running the risk of detection to gain his point. Besides this, some coaches and older men persist in teaching the players to most effectively "put an opponent out," as it is called, in many adroit and indistinguishable ways.

So long as the larger universities play the game in this way, it is bound to have a bad effect on the school boys. Trickiness and foul play are absolutely encouraged in many places. The result is bad for the morals as well as for the body.

Is it not time for the larger and more important universities, considering not alone their own condition, but the bad effects outside, to cry Halt?

Your Committee is thoroughly convinced that in the interest of clean, fair-minded sport, a complete change is necessary, — either to adopt a different kind of football game or else to so change the existing one as to make it radically different. If changes are to be made, your Committee believes that no man now a member of the so-called Intercollegiate Rules Committee should have a hand in it, believing that they are so far committed to the present system that they could not agree to such changes as are absolutely necessary to produce a decent, clean, pleasurable contest, instead of the present apology for a rough-and-tumble fight.

A new committee could, it is believed, formulate rules that, while simple, would cause an absolutely different result. In this connection it is necessary to point out that proper umpires are as necessary as good rules, — men who, unlike many of those used as such in late years, are ready and anxious to punish instantly any infraction of the rules. Such men can be found, but few so far have shown the proper spirit and inflexibility.

Football is a fine game when properly played, but the present method is thoroughly bad and ought to be stopped absolutely and finally.

Any university taking this action will later be considered as a benefactor by many players and by all lovers of healthful, clean sport and fair play. There is no desire to criticise any especial set of players; all seem more or less to blame; it is the system that is wrong.

Your Committee does not feel called on, nor is it competent, to say exactly what change, either in the game, or rules, should be made, but it does feel that a change is imperative.

Your Committee recommends action by the Overseers.

ROBERT F. CLARK,
EDWIN FARNHAM,
WILLIAM HOOPER,
SAMUEL H. DURGIN,
F. L. HIGGINSON.

December 13, 1905.

CLXVI.

REPORT OF THE COMMITTEE ON ENGINEERING.

To the Board of Overseers of Harvard College: —

Your Committee to visit the Engineering Department of the University, as a result of its investigation of the present condition of the Department, desires to recommend to your attention and to that of the President and Fellows the following votes: —

1. That the corps of instructors be increased without delay, particularly in the higher and more permanent grades.

2. That steps be taken towards establishing a separate Faculty of Engineering or of Applied Science.

The relations of the Department to other interests of the University are best brought out by a brief history of its growth since its foundation in 1847. It was the third engineering school in point of time to be established in the United States, having been started with the avowed object, as stated by Mr. Lawrence in his letter to the Treasurer of Harvard College, of providing "a school not for boys, but for young men whose early education is completed either in college, or elsewhere, and who intend to enter upon an active life as engineers or chemists, or, in general, as men of science applying their attainments to practical purposes." At that period, Mechanical Engineering was unknown as a profession, but Mr. Lawrence clearly indicated his conception of its importance to the country by calling attention to the education of men for "the invention and manufacture of machinery."

Thus the traditional position of Engineering in this School is that of a graduate school with its own ideals and requirements. Until the Civil War broke out, the School had a very creditable history; but, after that, it gradually fell away to practical non-existence. When the Faculty of the School was merged into the Faculty of Arts and Sciences, thereby turning the Scientific School into an undergraduate division, Engineering began to take on new life. It is now the third department in size under the Faculty, English being first, and History and Government second. A table, marked Table I, is herewith appended, showing the relative number of enrolments and teachers in all the departments for the year 1903–04, as given

TABLE 1.

DEPARTMENT.	Number of Courses.	Student Enrolments.	Enrolments per Course.	Professors.	Assistant Professors.	Instructors (Faculty).	Instructors (for one year).	Assistants.	Teachers.	Teachers and Assistants.	Average Courses per Teacher.	Average Enrolments per Professor.	Average Enrolments per Teacher.	Average Enrolments per Teacher and Assistant.
Semitic	12	92	8	3	—	—	1	—	4	4	3.00	31	23	23
Ancient Languages	39	729½	18	10	3	2	4	—	19	19	2.05	73	38	38
English	24	1982	83	4	6	5	13	8	28	36	.86	495	71	55
Germanic	24½	931½	38	3	—	3	6	5	12	17	2.04	310	78	55
Romance	31	1209½	39	3	5	—	5	7	13	20	2.38	403	93	60
History and Political Science	24	1814½	76	7	1	—	4	18	12	30	2.00	259	151	60
Economics	20½	1285	63	3	3	1	2	8	9	17	2.17	428	143	76
Philosophy	27½	923½	34	7	1	2	5	10	15	25	1.83	132	61	37
Fine Arts	5	340	68	1	—	1	1	—	3	3	1.67	340	113	113
Architecture	20	281	14	2	—	2	6	—	10	10	2.00	140	28	28
Music	7	213	30	1	1	—	1	1	3	4	2.33	213	71	53
Anthropology	3½	96	27	1	—	1	1	—	2	2	1.75	96	48	48
Engineering	29½	1476½	53	2	6	1	7	7	16	23	1.84	738	92	64
Mathematics	24	395	16	4	1	3	1	—	9	9	2.67	99	44	44
Chemistry	16½	657½	40	3	—	3	—	22	6	28	2.75	219	82	23
Botany	8½	156	18	4	1	1	3	3	9	12	.94	39	17	13
Zoölogy	7	175½	25	1	2½	—	1	3	4½	7½	1.56	175	39	23
Geology	27½	797	29	4	5½	2	3	10	14½	24½	1.90	199	55	33
Physics	13½	485	36	3	1	2	2	3	8	11	1.23	162	61	44
All Courses	364½	14040	39	66	37	29	66	105	197	302	1.85	213	71	46
Science not Engineering	97	2666	27	19	11	11	10	41	51	92	1.90	140	52	28

in the President's report. There were in Engineering the equivalent of 1476½ full-course enrolments, obtained by adding together all the enrolments in courses after having divided the numbers in half-courses by two. The teaching force employed in the Department consisted of *two* professors, six assistant professors, eight instructors, and seven assistants. This gave one teacher for 92 enrolments, and one professor for 738 enrolments.

The average for the entire Faculty during the same year was one teacher for 71 enrolments and one professor for 213 enrolments; while the science department, exclusive of Engineering, had one teacher to 52 enrolments, and one professor to 140 enrolments.

The increase of work since the year 1892–93, when the Department was completely reorganized, is indicated by the numbers for that year. There were 238½ enrolments and 8 teachers. The enrolment has therefore risen to 6½ times its size twelve years ago, and the teaching force to not quite 3 times.

It thus appears that Engineering has advanced in a comparatively short time from last place on the list of departments to third place, in spite of the evident insufficiency of numbers in its teaching force. This growth, with the results, shows interest and good work on the part of the officers and students, and indicates the permanency and importance of Engineering as one of the larger departments of the University. There is no doubt that Harvard can do a great work for the Engineering profession by meeting the demand for instruction in the same broad and liberal way that has characterized its treatment of other subjects. Up to this time, the growth of the Department has outstripped the equipment as to teachers and laboratories, and the strain upon the teaching force is now too great. This is particularly true because close contact of teachers with students is of vital importance in training young men for Engineering, and personal supervision is absolutely necessary in all the laboratories and draughting rooms. Little time is now left to the instructors, outside of the drudgery of the class-room, for research and investigation which would be an important aid to the University.

In the opinion of the Committee, the size of the Department, established and developed under somewhat adverse circumstances, has become such as to warrant the belief that it is not likely to fall behind in the future. This opinion is strengthened by the fact that during the gradual raising of the entrance requirements, the numbers of the enrolments have increased.

That the work in the class-room is strenuous is shown by the low percentage of graduates in the Scientific School, as compared with

the rest of the College, as given in Table II. This table is made out from the President's reports for the past ten years. The College

TABLE II.

GIVING NUMBER OF GRADUATES FROM COLLEGE AND SCIENTIFIC SCHOOL.

COLLEGE.

Year.	Total No. of Students.	No. of A.B. Degrees conferred.					Percentage of Students graduating.
		Plain.	Cum.	Magna.	Summa.	Total.	
1904	2009	289	93	58	—	440	21.9
1903	2073	342	103	55	11	511	24.6
1902	2109	276	78	60	8	422	20.
1901	1983	312	80	64	7	463	23.3
1900	1992	264	77	59	7	407	20.4
1899	1902	301	93	47	4	445	23.3
1898	1851	257	74	54	8	393	21.2
1897	1819	236	79	63	3	381	20.9
1896	1754	395	—	—	—	395	23.5
1895	1771	360	—	—	—	360	20.3
Total . .		3032	677	460	48	4217	

Average percentage of students graduating, 21.94.
Percentage of graduates receiving honors, 28.10.
Required 17 courses for Degree.

SCIENTIFIC SCHOOL.

Year.	Total No. of Students.	No. of S.B. Degrees conferred.					Percentage of Students graduating.
		Plain.	Cum.	Magna.	Summa.	Total.	
1904	530	43	23	11	—	77	14.5
1903	548	59	30	12	—	101	18.5
1902	584	50	15	10	1	76	13.
1901	549	45	21	8	1	75	13.6
1900	507	33	12	11	3	59	11.6
1899	495	20	13	10	3	46	9.2
1898	415	6	9	13	1	29	6.9
1897	410	10	7	8	—	25	6.
1896	368	29	—	—	—	29	7.8
1895	340	23	—	—	—	23	6.7
Total . .		318	130	83	9	540	

Average percentage of students graduating, 10.78.
Percentage of graduates receiving honors, 41.11.
Required 20½ courses for Degree.

graduated 21.94% of its enrolments, and the graduating classes obtained honors for about 28.1% of their numbers. In the Scientific School the number of graduates was 10.78% of the enrolment, and about 41.11% of the graduates won honors. This clearly proves that, notwithstanding the lower requirements for entrance prevailing during the period in question, and the prescription of about twenty-five per cent. more work in the School during the four years, the Scientific School does much better by its students than the College. It should completely dispel the prevailing opinion among graduates who were here during the period of the School's decadence that it is still inferior.

The seriousness of the course for those who enter specially for the degrees in Engineering is exhibited in Table III. By this it is seen that the percentage of graduates from each class did not exceed 40 for any year, and the average did not exceed thirty per cent. This indicates the effect of a low entrance requirement and a high standard of work.

TABLE III.

GIVING NUMBER OF THOSE ENTERING AS ENGINEERING STUDENTS WHO GRADUATED.

Year Entered.	Total No. Entered.	Number Graduated.	%
1900	79	18	22.8
1899	60	21	35.
1898	67	20	29.9
1897	65	26	40.
1896	62	19	30.6
1895	59	18	30.5
1894	56	14	25.

In spite of the difficulties, however, a very large part of the instruction for all Scientific School students is given in the Department of Engineering, and many College students now resort to its courses. During the year 1903–04, about 28% of the enrolment was made up of students registered in the College. This popularity of the Engineering courses is very creditable to the teachers in charge, and in the opinion of your Committee their success is richly deserved. Besides the unflagging enthusiasm which has been manifested by those in charge, they have manifested great wisdom in selecting the controlling method of teaching, which is to give the student a broad and thorough education in the underlying principles of Engineering, rather than to complete the training with a view of fitting him for some special branch of the profession. This thorough training will be only so far of any immediate value after graduation

as it opens to the student a larger field for employment, but it is sure to bring abundant reward in later years, when he is aspiring for higher positions.

Another interesting side of the Engineering Department at Harvard is the Summer instruction at Squam Lake, New Hampshire. Every student of Civil Engineering is obliged to devote at least eleven weeks to surveying and railroad engineering, and a large number of College students join them in this instruction. The out-door life and actual contact with surveying problems as they occur in practice cannot fail to be more beneficial to students than the class-room. Moreover, the saving of time that would otherwise be wasted adds to the student's effectiveness, and the intimate relations established between the instructors and students cannot fail to be helpful during the school years that follow the camps.

One of the hindrances in the way of the development of Engineering as a large professional department of the University is its close relation to the Faculty of Arts and Sciences. There are in general four different types of schools in the United States for the education of engineers.

1. As an undergraduate course in a university directed by the same faculty that is charged with the academic instruction. This is the Harvard method, and it is that which prevails in most schools that do not rise above second rate.

2. As an undergraduate course in a university, directed by a faculty of its own, having no special relation to the academic faculty. This is the Yale method. It has given fair results, but has accomplished little or nothing in adding to the general scientific advancement of Engineering.

3. As a graduate or professional school, forming one of the great departments of a university, such as the law and medical departments. This is the Columbia and, to some extent, the Cornell method. The students may have undergraduate or graduate work and the opportunity of spending five, six, or seven years in getting a liberal education as well as the technical training for a profession. This relation to university instruction has given excellent results, and it offers the opportunity for developing a great school of research.

4. As a separate technical school, having no affiliation with a university. Examples of this are found in the Rensselaer, Stevens, Case, and Massachusetts Institute of Technology. These schools have given excellent results in the preparation of young men to do

something useful to the community immediately after their graduation, but it is a serious question if their ultimate effects are not narrowing to the profession of Engineering. The highest conception of an Engineer is one who has the broad vision of an enlightened education, and the professional information coming with education and experience in technical science.

Whether the School should develop as an undergraduate school or should become primarily a professional school on a parity with the schools of law and medicine, it should, we believe, be under the control of its own faculty and not of a general faculty which also controls the academic departments. The general College Faculty is so large, and the details of the work of the Department of Engineering are so remote from the interests of a majority of the members of that Faculty, that it is impossible to obtain intelligent attention to questions vital to the Department. It seems to your Committee that a complete separation should take place. If Engineering is worth doing at Harvard, it is worth doing well, and the governing boards of the University should seriously consider this question without delay. While there may have been justification in the past for permitting the equipment of the Department to lag behind the requirements of the situation, it would be a serious blunder now to have the courses lose any of the headway they have gained. The next few years will be very important in the development of Engineering education all over the country, and Harvard should not be allowed to accept second or third rank, waiting for the income of the McKay fund, or the discussion of a union with another institution. It is not the function of this Committee to recommend whether it is best for the School to be limited to graduate work, that is, to become, strictly speaking, a professional school, or to be so organized as to enable professional work of a high class to be carried on, while at the same time there would be the opportunity for the man who chooses so to do, to get a training parallel to that given in the academic department, as preliminary to high grade professional work; but, in any event, the science of Engineering should be placed on the same dignified and worthy level as Law and Medicine. It would seem wise, from this point of view, to anticipate the income from an assured fund by making such additional appointments as will place the Department at least alongside of the other departments under the Faculty, and then, to plan for a school of Engineering when the larger income becomes available. In this way, your Committee hopes to see the Engineering school

at Harvard rise above the ordinary level of such schools, and attain distinction in the profession.

J. R. WORCESTER,
CHAS. H. MANNING, U. S. N.,
C. C. SCHNEIDER,
E. A. S. CLARKE,
E. W. RICE, Jr.,
JAMES J. STORROW,
FREDERICK P. FISH.

December 13, 1905.

In returning to the Board for printing and publication the accompanying Report of the Committee on Engineering, the Committee on Reports and Resolutions desires to call particular attention to it. This Report has evidently been prepared with much care, and after full consideration of the matters discussed in it. In the judgment of the Committee on Reports and Resolutions it is a document to which the notice of both the Corporation and the Faculty of Arts and Sciences should be called. Your Committee is not prepared to submit in this connection any recommendations of its own. It is, however, of opinion that the recommendations made in the Report are entitled to, and should receive, careful consideration.

All of which is respectfully submitted.

By order of the Committee,

CHARLES F. ADAMS,
Chairman.

Boston, January 10, 1906.

Voted, That double the usual number of the Report of the Committee of the Board to visit the Course in Engineering be printed, and that copies of the same be forwarded by the Secretary to the President and Fellows and to the instructors of the Department of Engineering, for their information; and the attention of the President and Fellows be specially called to the matters contained and the recommendations made in the said report.

CLXVII.

REPORT OF THE COMMITTEE ON THE ADMINISTRATION OF THE UNIVERSITY CHAPEL.

To the Board of Overseers of Harvard College: —

Your Committee met last Spring toward the close of the College term. All the members of the Committee were present, and four of the preachers to the University.

It appeared that the year at the Chapel had been full of encouragement; that the services for the most part had been well attended, and that everything promised well for the future.

Professor Peabody was away on leave of absence during the last half-year, and the affairs at the Chapel were ably administered throughout that period by Professor William W. Fenn of the Divinity School.

As usual, it was apparent that the feature of the work which had proved of greatest interest to the preachers was that of the Morning Prayers. The Sunday evening services, to be sure, attracted the customary amount of attention, — the Chapel, indeed, sometimes being crowded to overflowing; but as a rule the townspeople who were present outnumbered the students. The Vesper Services on Thursday afternoons appeared, however, to have lost a little of their hold. It was, therefore, the brief religious service every week-day morning, attended by students only, and a few Professors, which seemed of most significance. And your Committee wishes to emphasize the fact that it certainly is encouraging to have a daily attendance at these services ranging from one hundred to two hundred men. This may not seem so very many when account is taken of the great body of students now living in Cambridge; but it is much to be doubted whether in any other community of busy men so large a proportion would be found interested in attending voluntarily a service of daily worship.

Respectfully submitted,

PAUL REVERE FROTHINGHAM,
Chairman.

December 13, 1905.

CLXVIII.

REPORT OF THE COMMITTEE TO VISIT THE ARNOLD ARBORETUM.

To the Board of Overseers of Harvard College: —

Your Committee has visited the Arnold Arboretum several times during the past year, and has made itself familiar with the work, plans, and requirements of the institution.

We find that the collections of living plants have been placed in a manner to secure the health and best development of the individual trees and shrubs, in groups easily found and conveniently arranged for study, and that these natural groups have been disposed in a manner to heighten the great natural beauties of the ground occupied by the Arboretum. The arrangement, then, of the Arboretum as an outdoor museum seems to be excellent and to fulfil the requirements of such a museum from the cultural, educational, and artistic point of view.

The Arboretum is equipped with a large herbarium and dendrological library, and these departments are increasing steadily and rapidly. The nurseries of the Arboretum are filled with great quantities of rare and little known plants, and its collections are being steadily increased by a systematic correspondence with botanists, botanical gardens, nurserymen, foresters, and botanical collectors in all temperate countries, and by the constant journeys of its zealous and active officers.

The scientific work that has been done at the Arboretum in addition to the arrangement and installation of its collections, living and dead, has been confined to the morphological study of trees and shrubs, especially those of North America, and in increasing the knowledge of North American forest conditions. It has been the means of introducing American trees and shrubs into European and eastern Asiatic gardens, and through its agency many Japanese, Chinese, and Siberian plants valuable for the decoration of parks and gardens, or as timber or fruit trees, have been introduced and widely cultivated in the United States. Its influence on the planting of American parks and country places and in securing legislation in regard to American forests has been conspicuous and gratifying.

The Arboretum affords unusual facilities for the study of trees and shrubs in their scientific and artistic aspects, but it seems desirable to your Committee that its work should be broadened, and we believe that it should be equipped with two new departments, one for the study of diseases of trees, and another for the study of insects injurious to trees and other plants. These are subjects of immediate and growing interest to the community, and no other establishment in the country is so well equipped for furnishing facilities for studies in these departments, or for making known the results of such studies. Your Committee feels that it cannot urge the adoption of these two departments too strongly.

The income of the Arboretum is inadequate for additional work. The total income of the Arboretum endowment for the year 1903–04 was only $15,075, and of this $1,082.98, the income of the Bradley Fund, is appropriated to a special use. This income has been augmented by gifts for immediate use made from time to time by friends of the Director, but such gifts may cease at any time, while the expenses of maintaining the Arboretum naturally increase from year to year. An endowment that will produce an income of $50,000 will hardly suffice to carry on the work already commenced at the Arboretum and provide for the new departments which we believe are essential to its best use. The Arboretum requires, too, an assured income with which it can carry on dendrological explorations in the United States and other countries with the view of the discovery and introduction of new trees and shrubs useful to the community; and it requires an income for the publication of the results of its scientific work, its discoveries, and reports. It is our belief that the Arnold Arboretum is now the most important botanical garden in the New World, and that it is one of the best known, and within its special field one of the best equipped and most useful dendrological stations in the world. It is a live institution and it has done much useful work at a remarkably low cost. It cannot hope, however, to maintain its high position without the financial support of the community which has derived the greatest benefit from its establishment.

Your Committee feels that too much praise cannot be given to Professor Sargent for his arduous work on behalf of the Arboretum. He has devoted his whole life and contributed largely from his personal means to the advancement of the institution. We feel that all friends of trees and shrubs should come forward and aid in putting the Arboretum on a sound financial footing. In view of the

depredations of the gypsy and brown tail moths alone, such aid if given promptly will repay tenfold any sums which may be given.

STEPHEN M. WELD,
MARY S. AMES,
ABBY A. BRADLEY,
CHARLES E. STRATTON,
FRANK G. WEBSTER,
NATHAN MATTHEWS,
F. S. MOSELEY,
WALTER HUNNEWELL,
JOHN E. THAYER,
AUGUSTUS HEMENWAY.

DECEMBER 13, 1905.

CLXIX.

REPORT OF

THE COMMITTEE TO VISIT THE UNIVERSITY MUSEUM

AND

THE COMMITTEE TO VISIT THE MUSEUM OF COMPARATIVE ZOÖLOGY

AND

THE COMMITTEE ON ZOÖLOGY.

To the Board of Overseers of Harvard College: —

On November 22, 1905, the Committees of the Overseers appointed to visit the University Museum, the Museum of Comparative Zoölogy, and the Department of Zoölogy, met Mr. Alexander Agassiz, Professors Mark, Castle, and Parker, and Mr. Samuel Henshaw, Curator, at the University Museum, at ten, eleven, and twelve o'clock, respectively.

Of the fifteen members of the three committees five were present, viz.: — Dr. C. F. Folsom, Messrs. Augustus Hemenway, Francis N. Balch, William Brewster, and Rodolphe L. Agassiz.

The Chairman is confirmed in his belief, previously expressed, that large committees are useless. He therefore respectfully recommends that in future a committee to visit the three Departments, or Museums, should consist of two members: one an Overseer, and one an expert.

Your Committee passed three hours in the University Museum buildings. In the University Museum the large crowds of visitors do no damage, and require only one policeman. Mr. Agassiz feels that the visits of the public and of school-children are of great benefit to them, educationally. Other agencies, as the horizontal sunlight of winter, and soft coal smoke from the other College buildings, damage the collections. The birds are fading, and coal soot sifts over delicate specimens. Dark window-shades and weather strips seem the only available remedy.

There have been no large accessions except from Mr. Agassiz's recent expedition.

The gap to connect the Peabody Museum is still unclosed, and awaits a benefactor.

A published guide-book, of simple and direct character, for the public is needed.

Money is always needed, whenever a favorable time for an appeal shall present itself. Five thousand dollars a year would supply the skilled instructors needed. These paid assistants or instructors could give individual instruction, and make available the working collections, which are distinct from the exhibition collections. Specimens could be taken from the cases and studied under supervision. It was the habit formerly to do so.

Unpaid assistants are a necessary evil, — but whatever courses (individual ones) are now given, are by teachers without pay.

Courses for advanced students and elementary student courses are both desirable. These are for one, two, or three persons.

In the Museum of Comparative Zoölogy our attention was called to a new shark, from Japan, and a large, brilliant, and fatal venomous lizard from Mexico.

Although there is great public interest in birds, no new ornithologist is coming forward. There are too few.

Mr. Henshaw needs three new assistants, salaried; not to teach, but to care for ornithology, entomology, and paleontology. The teaching in Systematic Zoölogy is lacking. Professors are needed.

In the department of Zoölogy the classes are of the usual number of students. For the medical profession and for government positions more aspirants should be educated here; and it is advised that the Medical School Faculty call attention to the usefulness of zoölogical preparation to the undergraduate contemplating a medical or scientific career.

Money is needed for experiments, for publications, to relieve teachers from drudgery, and give them time for research. A very useful course on the Domestic Animals is given. Courses are now alternated year by year — the same amount of teaching, but more varied.

For the Committees,

DAVID W. CHEEVER,
Chairman.

Dr. Folsom dissents from the recommendation to reduce the visiting committees.

December 13, 1905.

The Committee on Reports and Resolutions herewith returns the Report of the Committees of the Overseers appointed to visit the University Museum, and the Museum of Comparative Zoölogy, and

the Department of Zoölogy. This report has been prepared by our associate, Dr. David W. Cheever. In it he incorporates the following recommendation : —

"The Chairman is confirmed in his belief, previously expressed, that large committees are useless. He therefore respectfully recommends that in future a committee to visit the three Departments, or Museums, should consist of two members : one an Overseer, and one an expert."

The subject here referred to is one which has, first and last, received much consideration on the part of the Committee on Reports and Resolutions. The proposal to reduce the number of those constituting the several Visiting Committees referred to would be strongly opposed by a large proportion, probably a very considerable majority, of the officers and instructors connected with the different departments of the University. The tendency is, on the contrary, to increase the membership of the committees beyond the number provided in the By-Laws of the Board; and, in revising the list of committees, the Committee on Reports and Resolutions is continually met with earnest remonstrances on the part of the heads of departments against dropping any of those composing the committees to visit their particular departments when new members are added to such committees. Under these circumstances, the effort of the Committee on Reports and Resolutions has been to combine the two systems, — that set forth in the By-Laws of the Board, and that suggested by Dr. Cheever. This is not difficult. Under the circumstances indicated in Dr. Cheever's report, the proper course is for any particular committee to appoint a sub-committee of its number, consisting of one, two, or three members, as may under the circumstances be deemed most expedient, and devolve upon that sub-committee the duties and authority of the entire committee. The report of the sub-committee is then, at the proper time, laid before the whole committee, and when accepted by it presented to the Board.

Under these circumstances, the Committee on Reports and Resolutions is of opinion that no action is necessary upon the recommendation above referred to. The desired result can readily be accomplished under the existing system.

All of which is respectfully submitted.

By order of the Committee,

CHARLES F. ADAMS,
Chairman.

CLXX.

REPORT OF THE COMMITTEE ON GOVERNMENT.

To the Board of Overseers of Harvard College: —

The Committee on Government have been considering the question whether the officers of instruction in the University are not giving too large a portion of their time and thought to administrative duties, and under their direction certain inquiries have been made the result of which is embodied in the report to the Committee herewith submitted. This result is laid before the Board for its information, and the Committee would suggest that a copy of it be transmitted to the Faculty of Arts and Sciences with the request that they consider the subject and advise this Board whether any action should be taken in the matter, and if so, what action they would suggest.

For the Committee,

MOORFIELD STOREY, *Chairman.*

January 10, 1906.

To the Committee on Government of the Board of Overseers of Harvard College: —

Gentlemen, — In February, 1904, the following letter was sent to all members of the Faculty of Arts and Sciences not on leave of absence, with the exception of the President: —

44, State St., Boston, Feb. 23, 1904.

Dear Sir: —

The question having been raised whether the officers of instruction in the University are not giving a large fraction of their time and thought to administrative duties, I am directed by vote of the Committee on Government of the Board of Overseers to ascertain the number of hours given by members of the Faculty of Arts and Sciences to such duties and to instruction in Harvard University. At the end of the academic year I shall therefore ask you in another letter to report the number of hours given by you to the following: —

1. Instruction in Harvard University.
2. Meetings of your Department.
3. Meetings of Committees of your Department.
4. Meetings of the Faculty.
5. Meetings of Standing Committees of the Faculty.

6. Meetings of Special Committees of the Faculty.
7. Meetings of Administrative Boards.
8. Advising Freshmen.
9. Other administrative work not falling under any of the heads above mentioned.

Yours very truly,

(Signed) Gardiner M. Lane.

At the end of the academic year, June 30, 1904, there were sent to the members of the Faculty, to be filled out and returned by them, blank forms of statement, of which 122 have been returned, some of them quite recently. Many were filled out with great care, but some are so indefinite in terms as to be of little practical value. An attempt has been made to tabulate these statements by Divisions and Departments. The tabulations are submitted herewith.*

The figures contained in the tables have been verified, so far as possible, but only in the case of "Meetings of the Faculty" can accurate figures for verification be obtained. The tables contain a column showing the number of hours as estimated by members given to Faculty meetings, and another column, parallel to it, showing the actual time given, according to the records, if the member was present during the whole of each meeting that he attended. These columns give some assistance in judging the value of other figures submitted. The estimate and the record will be found to vary widely in some cases.

From the tables have been taken the following statistics: —

Meetings of Division or Department.

Ninety-eight members report an expenditure of 2,082 hours a year, or an average of over 21 hours a year, at these meetings. The amount varies greatly in the several departments, running in some cases as high as 50 hours, or even more, 20 to 40 or 45 hours being the ordinary range for regular attendants.

Meetings of Committees of Division or Department.

Sixty-seven members report no time spent in this way. Forty-three report an expenditure of 666 hours, or an average of over 15 hours. Divided among the 110 men reporting, this would give

* These Tables cover ten large sheets, and so are not sent with this report. Copies of the Tables may be seen at the Treasurer's Office, 50, State St., Boston, or at the office of the Secretary of the Faculty of Arts and Sciences, 5, University Hall, Cambridge.

an average of about six hours. In certain instances time spent examining candidates for the doctorate and honors is included under this head, though not properly to be considered administrative work. In a division where there are annually several candidates for the doctorate, a serious, though inevitable, draft is made upon the instructor's time. One man reports that in March, April, and May, he spent an average of 2¼ hours weekly in reading Ph.D. theses, and that in June he gave 20 hours to the oral Ph.D. examinations.

Meetings of the Faculty.

The whole number of members of the Faculty in 1903–04, including the President, was 139. The Faculty met 29 times. Dividing the members on the basis of academic seniority, we may arrange the following table of attendance on meetings: —

	Senior Half.	Junior Half.	Total.
Attended all the meetings	..	2	2
" 25–28 "	9	6	15
" 20–24 "	14	8	22
" 15–19 "	7	12	19
" 10–14 "	12	14	26
" 5– 9 "	12	13	25
" 4 "	2	1	3
" 3 "	2	2	4
" 2 "	1	5	6
" 1 meeting	1	4	5
" no meetings	7	1	8
On leave of absence	3	1	4
Total	70	69	139

That is, taking out the four men on leave of absence, the 67 senior members attended an average of 13.73 meetings, and the 68 junior members an average of 13.17 meetings. At the first meeting, 10 of the 22 junior members were present; at the last, 1.

Meetings of Standing Committees of the Faculty.

(The Committee on Instruction and Degrees in Radcliffe College is not included.)

Fifty-three members were on no standing committee; 56 reported attendance of 779 hours, an average of about 14 hours; 26 made no report. Assuming that these also averaged nearly 14 hours, the total time spent on this item would be about 1,140 hours, or an average of about 8½ hours for each member of the Faculty. But in some cases the time spent by members of a committee like that on admission examinations may run up to 60 or 70 hours.

Meetings of Special Committees of the Faculty.

The time consumed in such meetings was inconsiderable in 1903–04. Fourteen members report 158½ hours; 99 members report no time spent in this way.

Meetings of Administrative Boards.

The three boards, Harvard College (15 members), Scientific School (14), and Graduate School (8), included in all 36 men, the Secretary being a member of both the College and the Scientific School boards. Thirty-two men reported a total attendance of 1,251 hours. Some figures given were clearly overestimates, but in general it may be said that an average member of an undergraduate board spends about 40 hours at the meetings, and of the graduate board about 15 hours. It would be profitable to consider whether much work done by these boards might not well be assigned to strictly administrative officers.

Advising Freshmen, Special, and Scientific Students.

The advisers of Freshmen numbered 24 (six were not members of the Faculty, and are therefore not included in this report); the advisers of Scientific students numbered 14 (one was not a member of the Faculty); and of Special students, 9. Of the 40 advisers who were members of the Faculty, 28 report widely varying amounts of time, aggregating 843 hours. The advisers of Freshmen in some cases spent only a few hours — 6, 8, 14 — in the work; in others, 20, 24, 30, 50; the Chairman, 85; while the figures for advisers of Scientific students average somewhat higher.

Other Administrative Work, not included under any of the Heads above mentioned.

The Recorder was wholly occupied in performing the administrative duties of his office. The Secretary, the Chairman of the Appointment Committee, the Dean of Harvard College * and the Inspector of Grounds and Buildings were chiefly so occupied. The Dean of the Faculty and the Secretary of the Scientific School gave much time to administrative work. In the cases of the other members of the Faculty, the work which comes under this heading may be roughly classified as follows: —

* Besides the Recorder and the Dean, there were in Harvard College an Assistant Recorder and a number of clerks and stenographers.

(a) The Dean of the Scientific School reports 280 hours. The Dean of the Graduate School had 30 regular office hours and a considerable amount of other work. The Graduate School has a Secretary, whose duties are wholly administrative; the Scientific School has a Secretary, whose duties are largely administrative, and an executive clerk in addition.

(b) *Chairmanships of Departments and Divisions.* — Eight of the 27 chairmen give estimates varying from 20 to 150 hours. For a large Department or Division, 100 to 150 hours is probably an ordinary expenditure of time. (It should be observed that some chairmen of the large Departments, such as those in Modern Languages and Classics, give no estimates.) If the chairmen were provided with clerks or secretaries, the strain of this work would be greatly lessened, while the Divisions and Departments as organizations would probably be more efficient.

(c) *Secretaryships of Departments and Divisions.* — Two secretaries report, respectively, 60 hours and 5 hours.

(d) *Editing Department Pamphlets, e. g., English, Classics.* — Two men report 20 to 30 hours spent in this way.

(e) *Charge of Museums and Laboratories and of the Chapel.* — The amount of this work in many cases is very great. It falls upon some 17 men, 10 of whom report figures ranging from 30 to 1,400 hours, and averaging 352 hours. It seems likely that this supervision cannot be profitably intrusted to purely administrative officers, but the appointment of clerks or secretaries would very much lessen the time required from instructors.

(f) *Library Work.* — Under this head may be included the duties of the Library Council, departmental libraries, making out book orders, etc. The admirable way in which the administrative work of the Library is done by purely administrative officers is brought out in strong relief by the fact that only four members of the Faculty mention duties of this kind, occupying in all about 55 hours.

(g) *Examinations.* — Ordinary examinations are mentioned by a few members of the Faculty, but should properly be considered as a department of instruction rather than of administration. Ph.D. and Honor examinations are spoken of by 13 men, besides those who include them under "Meetings of Committees of Division or Department." Comment was there made upon this item.

(h) *Appointments.* — Ten men (besides the committee chairman) speak of this work, six of them assigning to it respectively 8, 8, 12, 40, 50 and 50 hours; the two last named being in one Department.

(i) *Athletic Committee.* — The chairman of this committee, though suitably supplied with clerical aid, found that its duties consumed practically all his leisure time. Of the other two Faculty members, one reports 35 to 40 hours, the other is silent.

(j) *Conference and Correspondence, not included above.* — Two instructors speak of 60 to 90 and 100 hours spent in conferences with students, and one of 30 hours of correspondence. Work of this kind falls under the scope of this inquiry only so far as it does not directly relate to instruction.

(k) *Miscellaneous.* — Regent, 100 hours; Commencement Marshal, 50 (absent from Commencement in 1904), usually more; advising students in General Science, ?; preparation of charts for St. Louis, 65; camp at Squam Lake, ?; charge of Summer School, 50; chairman of committee to administer Phillips Brooks House, ?; business of sub-department (Landscape Architecture), 75; work in connection with various boards and committees, nine men, 91 hours. The Semitic and Geological Conferences, the Harvard Memorial Society, the Dante Society and work on such publications as the Harvard Oriental Series, the Harvard Studies in Classical Philology and the Quarterly Journal of Economics, though mentioned by various instructors, fall outside this inquiry.

The various passages in the Tables under the head of "Remarks," which in large part are expressions of individual sentiment and personal conditions, ought properly to be read as they stand in the originals and in relation to the context. It is worth while to observe, however, that five men directly state that the burden of administrative work upon members of the Faculty is too heavy; a sixth, referring only to his own case, says that his duties as chairman of the Athletic Committee occupied practically all his leisure time; four speak of an individual improvement in conditions; one complains because the University does not furnish him stationery for his committee work; one says, "it is not so much administrative work at Harvard as my teaching at Radcliffe that cuts into the time and energy needed for the adequate preparation of my advanced courses and for publication"; one says, "I find that the busier a man is, the more time he can find for serious work"; one speaks of the educational importance of advising Freshmen; one says, "The chief trouble lies, in my opinion, in the fact that scholars are not always good business men and often fail to transact business with promptness and despatch"; one says, "I had formerly much administrative work and very greatly enjoyed it"; one declares that "the total of

Faculty and administrative work is not worth taking account of"; one says that his "administrative work is very closely connected with the teaching."

Passing to specific points and suggestions of remedies, one instructor says, "The conversational Faculty meetings, in which no special business is discussed, consume much time"; another says, "One Faculty meeting destroys a day of research; I am more useful to the University at research than in Faculty meetings, so I never attend the latter." A division chairman speaks of much time consumed in trying to explain to his young instructors why they could not have larger salaries. One instructor, speaking of work in connection with the Appointment Committee (this Committee is now disbanded and the work done in a different way by a paid official), says, "Irregular work like this is a much more serious interruption of research than committees which come at stated times." Another speaks of the time spent in the mechanical performance of administrative duties, in going to and from meetings, etc., and of the "wear and tear" involved in these duties. The Director of the Physical Laboratory mentions that he has no secretary or clerk. One instructor says, "In my opinion, while a part of this work might be saved by a different organization and the employment of special administrative officers, a large part is inevitable, and it would not be to the advantage of instructors or students if it were committed to persons not actually teaching."

Finally, an extreme situation is suggestively summed up by the Plummer Professor, who is also Dean of the Divinity Faculty, viz.: "These administrative tasks occupy about half my time and . . . more than half of my thought. . . . These obligations appear to me inconsistent with the habits of serious scholarship, and it seems to me, either that provision should be made for secretaries to relieve Deans and other administrative officers, or that such officers should be relieved of a considerable part of their teaching function."

CONCLUSIONS.

The general conclusions derived from the tables submitted herewith are that much time is given to administrative duties by members of the Faculty of Arts and Sciences; that a very considerable part of the time so given could not well be saved without harm to the College, but that some changes in organization and the employment of clerks (more especially to assist chairmen of divisions and departments and the officers in charge of museums and labora-

tories and of the Chapel) would save much time, which could more profitably be devoted to study and research. It is worth while to consider whether much of the work now done by standing and special committees of the Faculty and administrative boards could not be done more effectively and with less expenditure of time by smaller committees, by individual members of the Faculty or by administrative officers.

The presidents of Yale, Princeton, Columbia, and Michigan have been asked if they could form any estimate of the number of hours given to administrative duties by instructors in their respective universities. In reply letters have been received from President Hadley of Yale; President Wilson of Princeton; President Angell of Michigan; and Mr. Keppel, Secretary of Columbia, copies of which are appended to this report.

GARDINER M. LANE.

YALE UNIVERSITY.

New Haven, Connecticut,
December 7, 1904.

My dear Mr. Lane: —

I will bring your note to the attention of the Registrars of the Academic and Scientific Faculties, and see if it is possible for them to give the detailed answers to the questions which are being studied at Harvard. Meantime, I can only reply to your inquiries in a general way. The amount of instruction which is regarded as representing full work at Yale is approximately either ten hours of lecture or class room work not in sections where the same ground is repeated, or fifteen hours of recitation work in sections which involve more or less repetition of the same ground, or thirty hours of supervision of laboratory practice; or combinations of parts of these several duties in corresponding proportions.

Departmental meetings with us are very informal, and not so much developed as they ought to be. I suspect that an average of less than two hours a week distributed irregularly through the year would cover the time required under 2 and 3.

For officers not on permanent appointment meetings of the Faculty amount to very little, — less than an hour a week on an average. For officers on permanent appointment the average attendance on meetings of the Faculties would be about one and a half hours a week.

Our standing committees of the Faculty are for the most part of the nature of administrative boards, so that it is very difficult to separate the two. I should say that an hour a week would more than cover the time given to these duties, though of course this amount varies greatly with different individuals.

With the special committees of the Faculty the average amount of time spent in actual meetings is very small, unless some specific and important reform is to be carried through. In those cases it may become very large; though even then the amount of time spent in the meetings is very much smaller than the amount of time spent in collecting material outside of the meetings. Leaving this latter out of account and averaging lean and fat years together, I should be disposed to place half an hour a week as the best guess that I could make for number 6.

Our system with the Freshmen is so totally different from yours that no answer under 8 is really possible; and the unclassified administrative work, while considerable for some individuals, would probably when distributed over the whole body not make a large enough average to keep a record. Leaving the detail of the classification aside for a moment, I should feel fairly confident that an average of about four hours of attendance on meetings of various kinds outside of the class room itself would be a fair estimate of the time demanded of regular members of the two undergraduate Faculties.

Faithfully yours,

(Signed) Arthur P. Hadley.

PRINCETON UNIVERSITY.

Princeton, N. J.,
December 12, 1904.

Mr. Gardiner Martin Lane, 44 State St., Boston, Mass.

My dear Sir, — In reply to your letter of December 9, I would say that I will take pleasure in obtaining, through the Secretary of the University, answers to the questions which you are submitting to the instructors at Harvard, and will ask the Secretary to transmit to you a copy of the replies.

The investigation seems to me a very interesting one, indeed.

Very sincerely yours,

(Signed) Woodrow Wilson.

UNIVERSITY OF MICHIGAN.

Ann Arbor, Michigan,
December 17, 1904.

Mr. Gardiner Martin Lane, Boston, Mass.

Dear Sir, — In answer to your letter of December 9th, I find on conferring with our professors that it is very difficult to make any statement applicable to the members of the Faculty in general. A good deal depends upon the personal zeal and enthusiasm in working with special students as to how much time they occupy in administrative duties outside of the time employed in teaching. But I should

think it safe to say that, in general, at least from three to six hours a week are taken by them in such service. I refer now to the heads of departments. It is quite impossible for me to make any statement about the instructors and younger assistant professors.

Yours truly,

(Signed) James B. Angell.

COLUMBIA UNIVERSITY.

New York, N. Y.,
December 12, 1904.

Mr. Gardiner M. Lane, 44 State St., Boston, Mass.

Dear Sir, — President Butler asks me to say that we shall be glad to give you any information that we can with regard to the amount of administrative work done by the teaching force at Columbia University. We have no figures on the subject, but, at President Butler's request, I have consulted one or two of our representative professors. The substance of their information is as follows: The organization of the department as an administrative unit is pretty well developed at Columbia, and it is coming to be recognized that as a general thing one man in the department is to be looked to for administrative work. In some departments this post comes by rotation, in others it is held by a man who has a special liking for administrative work or who perhaps is teaching a subject that does not appeal to a large number of students. One of these professors states that an hour to an hour and a half a day is the average amount of time that such officers would have to spend upon administrative work. Many of the professors are interested in activities not directly connected with the routine running of the University, and the administrative burden of these undertakings doubtless takes an additional share of their time. The figure I give is for the strictly University activities. With us, the matter of attendance on Faculty meetings has been reduced so that a professor is not likely to average more than one short meeting a month.

It has been the wish of the Trustees of Columbia University to reduce to a minimum the time which professors have to give to routine administrative work, and they have done all they could to help this by providing stenographic and clerical assistance wherever possible, and by developing the offices of the Registrar and the Secretary of the University. I think that as a result of this development the burdens have been considerably lightened within the last five or six years.

Very truly yours,

(Signed) F. P. Keppel, *Secretary*.

CLXXI.

REPORT OF THE COMMITTEE TO VISIT THE OBSERVATORY.

To the Board of Overseers of Harvard College: —

The Astronomical Observatory of Harvard University, like most institutions devoted to the advancement of pure science in this country, is dependent for support upon the voluntary gifts of persons interested in promoting science. Governmental aid or royal bounty, which support astronomical observatories in other countries, being unavailable here, private donations must afford in the future, as they have in the past, the only means for supporting or enlarging the work of the Observatory. Hence an occasional review of the work done by the Observatory may be useful both as assuring former donors and their descendants that their gifts have been fruitful in valuable scientific knowledge, and as encouraging the public to believe that further gifts would in like manner promote the progress of science. The present condition of the Observatory is such that a relatively small increase in the available funds would make possible a very large increase in the scientific output.

The period chosen for review covers the thirty years of the present Director's administration, or nearly one half of the whole history of the Observatory; but a few words about the earlier part of this history may serve as an introduction.

The former distinguished Directors, William Cranch Bond (1840–1859), his son, George Phillips Bond (1859–65), and Joseph Winlock (1866–75), commanded only slender means for their work, and yet that work has won wide recognition both at home and abroad, and has proved highly important to the advancement of astronomical science — facts which bear witness to the great ability of these men and to the wisdom with which they chose their respective fields of investigation. Their equipment, aside from the great equatorial refracting telescope, which had no superior and but one equal in the world, was meagre; the funds for running expenses were much restricted, especially in the earlier years; and the workers were few. A single titular assistant, with a few temporary employees supplied by the University or students working more or less

as volunteers, made up the entire staff. Much of the working time of the Director and his small staff was given to practical geodetic work in aid of the United States Coast Survey and other enterprises requiring the assistance of expert astronomers. The modest revenue of the Observatory was somewhat increased by these means. Nevertheless, such side occupations did not prevent the Bonds from making many noteworthy original discoveries, among which may be mentioned no less than ten new comets, the dark ring and an additional satellite of the planet Saturn, and the resolution of many nebulae, which had been supposed to consist of masses of continuous matter, into groups of stars thickly clustered together. They accumulated observations and studied the physical constitution of these celestial bodies, and published results which made large additions to the world's stock of precise knowledge. For one of these publications, the Monograph on Donati's Comet of 1858, written by the younger Bond, its author was awarded the gold medal of the Royal Astronomical Society of England. He was the first American astronomer who obtained this distinction.

The Bonds, moreover, made many inventions and improvements in astronomical apparatus. Among these the most noteworthy, perhaps, is the chronograph, a device for securing, by means of electric signals, greater accuracy in the recording of observations. This instrument was stated by the elder Bond to have been the joint invention of himself and his two sons. It was exhibited in London, and speedily afterwards adopted in all the great observatories of the world.

In the application of photography to astronomical observation and record, the Bonds were the pioneers, the elder having made his first experiments with the daguerreotype process for obtaining an impression of the sun's image in the year 1848, and the younger having presented to the French Academy at Paris a daguerreotype of the moon and of the stars taken with the Great Equatorial in 1851, and also having placed specimens of the same work on exhibition at the World's Fair in London the same year, for which a prize medal was awarded. The great step, however, was made by the younger Bond in 1857 and 1858, when images of the stars, showing their brightness and position, were obtained and accurately measured on glass collodion plates. Since the invention of the telescope no more important changes have been made in astronomical methods than the introduction of the stellar photograph and the chronograph.

Solar photography was largely developed during the administration of Professor Winlock, who became Director in 1866. To his emi-

nent mechanical ingenuity are due many of the devices which have contributed to the success of this new method of observation and record. His series of photographs of the sun, many hundreds in number, early demonstrated the practical value of photography to the astronomer. In 1870, Professor Winlock added to the equipment of the Observatory the new meridian circle, an instrument of the first class, with which was begun a systematic series of observations for the positions of all the stars in the so-called Cambridge Zone, or the belt of sky between 50° and 55° north declination, and overlapping by 20′ the zones on either side. Other great observatories of the world were doing a similar work, each for its own appointed zone, the ultimate object of the joint enterprise being to make a complete and accurate record of all visible stars in all parts of the heavens from one pole to the other. This was work of the greatest importance, and, with the introduction of a system of widely distributing accurate time signals and various longitude campaigns, constituted the principal work of the Observatory at this time. Although Professor Winlock's principal interest was in astronomy of position, he maintained the traditions of the Observatory as established by his predecessors by studying the physical properties of the stars. It was to this field that the principal energies of the Observatory turned at the period when our review begins, namely, when Professor Edward C. Pickering became Director, a year after the death of Professor Winlock in 1875.

At this time the principles of spectroscopy as laid down by Kirchhoff and Bunsen had been known scarcely fifteen years and their application to astronomy was still in its infancy. The possibilities of its revelation were being shown, but their realization seemed almost beyond reach. Stellar photometry was also in its infancy; photometric measurements, as distinguished from eye estimates, had been commenced only a few years before by Zöllner and Seidel. Of the many millions of stars, invisible to the naked eye, which make up the greater part of the universe, scarcely one out of a hundred had been listed or charted. Of the younger sisters of the Harvard Observatory, at Potsdam and Mount Hamilton, which have since cultivated with such brilliant success certain parts of the field thus opened, the first was only just born and the other little more than a dream of the future.

The history of science affords more than one example of the general fact that a freshly opened field may be best explored by new minds imbued with new ideas. It is a fortunate circumstance that the present Director brought to his work the previous special train-

ing of a physicist rather than that of a mathematical astronomer, since it was the physical side of astronomy rather than the mathematical which was then awaiting development. The time was ripe when the great work of the Herschels in exploring the heavens, which had made little progress for half a century, should now be taken up with the new instruments and the new methods which modern science had placed within the reach of the astronomer — the spectroscope, the photometer, and photography. To this end the increasing resources of the Observatory have since been directed.

Up to a recent period the stars could be studied only with the telescope, the observers being subject to all the drawbacks incident to weather, time, season, and to the manipulation of an instrument the use of which became more and more cumbersome and laborious as it increased in size. Now, in an hour's time, a photograph can be taken of a region of the heavens, the exploration of which by the eye might require midnight labor extending through months, accompanied by a degree of exposure on the part of the observer which has been likened to that of a soldier bivouacking on the field. The work of photographing was therefore begun and has been carried on, with results that will appear later in this review.

The stars are individuals, each emitting its peculiar combination of rays of light, thus showing its constitution to the mind that knows how to analyze its spectrum. The examination of the spectrum of even a single star by direct vision with the telescope was found to be a laborious task. But, through the establishment of the Henry Draper Memorial and by the aid of the objective prism and photography, the spectra of all the stars in a wide field are impressed at once on a photographic plate, and can be studied at leisure.

The positions of stars are determined at the moment of their passage over the meridian. Why not determine their brightness on the same occasion? Out of this thought grew the meridian photometer, gradually devised to meet, so far as possible, all the complex conditions of the problem, and to admit of rapid manipulation. It may be recalled that two years ago the millionth setting with this instrument, made by the Director himself, was announced.

No sooner were these applications of modern methods to the study of the stars fully realized, than a crowd of questions new and old presented themselves, and other applications were suggested. Are the heavens the symbol of immutability, or are the stars now and then subject to change? This was the great question which, according to tradition, suggested to Hipparchus a catalogue of the visible stars, in order that posterity might be able to answer it. For two

centuries it had been known that here and there was an exception to the rule of invariability, and, by the labor of a constantly increasing number of watchers, the number of stars known to change in their light from time to time had been carried to 150. Now, the laws of change among the millions of still unknown stars were investigated. To do this, the same regions of the heavens must be photographed over and over and the plates compared. In this way not only has the number of known variable stars been carried into the thousands but the laws of change have been developed into a system. Mysterious new stars had, in past centuries, been seen to blaze forth for a few days or months, and then fade away. Eight of these objects, or an average of one in two years, have been first detected at the Harvard Observatory.

In our latitude a large portion of the southern sky is invisible; and of the visible region a wide belt is too near the horizon to be most effectively investigated. To cover the whole sky, a branch observatory in the southern hemisphere was required. With the aid of the Boyden Fund, a careful investigation of possible stations south of the equator was made, which resulted in the selection of Arequipa, Peru, for the purpose. To that point was transported a rich outfit for research. Thus the work of the Harvard Observatory was extended over the entire sphere of the heavens, from pole to pole.

The important works of the Harvard Observatory during the last thirty years under the present Director may be catalogued as follows:

1. Photographs of the heavens, to the number of 182,277. By the use of photographic doublets the whole sky has been covered many times. These photographs include stars extending to the faintest magnitude that the telescope can reach. This collection "is unique, and gives the only existing history of the stellar universe for the past twenty years."
2. Photographs and studies of the spectra of stars with objective prisms on a scale never attempted before or elsewhere.
3. Measurements of the light of stars with meridian photometers and other instruments, devised by the Director, on a scale never before attempted and carried down to the twelfth magnitude.
4. Discovery and discussions of variable stars to the number of more than two thousand, more than ten times the whole number known in 1875.
5. First discovery of eight out of eleven new stars which have blazed forth in the sky during the past twenty years.
6. Photometric measures of the satellites of Jupiter while undergoing eclipse, leading to a signal improvement in the observation of these phenomena.
7. Measures and discussions of the light of the bodies of the solar system.

8. Discovery of two new satellites of Saturn by photography, carrying up to ten the number of secondary bodies which make up that system.

9. Completion of the scheme of work with the meridian circle which was commenced by Professor Winlock.

10. The establishment of a permanent observing station near Arequipa, Peru, by means of which all researches planned at Cambridge can be extended from pole to pole according to a uniform system.

Several of these works can be successfully continued with the forces and the means already at the command of the Observatory. But the first work we have mentioned, that of photographing the heavens, has resulted in a mine of such unexampled richness that we desire to call special attention to it.

An international association of observatories in both hemispheres was organized in 1889 to construct a photographic chart of the heavens on a uniform plan and scale. Work was commenced as soon as the necessary instruments could be constructed; but it is still incomplete. We have no intention of disparaging this great work, nor do we forget that it has other objects than those for which the Harvard photographs are intended, when we point out that the Harvard plates probably contain, several times over, all the stars that have been charted or will be charted by this great international effort. The extraordinary character of this unique collection of photographs at the Harvard Observatory and the possibilities contained in it seem to be worthy of earnest attention. We have here in a single small building pictures of the whole sky at several different epochs, embodying at least every thing that can be seen by the human eye aided by the most powerful telescopes yet constructed. With the aid of a simple measuring outfit a keen-eyed student of these pictures can in a single year do the life-work of a Herschel, gaining a knowledge of the heavens which, without these appliances, would require a generation.

Again, coeval with the beginning of this collection of photographic plates was the development by Kapteyn of an almost new field in astronomy — that of stellar statistics. The methods developed by this investigator and his coadjutors show how, what at first sight seems a confused mass of unmanageable immensity, can be so studied as to bring out the extent and the structure of the universe with a clearness before unattainable. The material contained in the Harvard photographs is precisely that which is wanted in the pursuit of this most important line of investigation. The opportunity is thus afforded whereby an amount of labor quite insignificant when compared with that which has in times past been bestowed on the

study of the heavens may lead to results which, a generation ago, would have seemed forever outside of human ken.

And yet comparatively little has been done in extracting from these photographs the treasures of knowledge which they contain. Like a mining company which has put out of the ground a vast quantity of precious ore, but lacks the means for reducing the ore and preparing the metal for market, the Observatory possesses a great store of knowledge in the rough, but wants the means for working this knowledge into useful shape for the benefit of the world. The Visiting Committee cannot resist a profound feeling that material of such unexampled richness should be utilized for the advancement of astronomical science without further delay, and that there is no enterprise for promoting a knowledge of the heavens more worthy than this of active public support.

We close this review by quoting a few passages from the Director's Annual Report lately submitted to the President of the University. He says:

"The present condition of the Observatory is that of an institution with superabundant opportunities for additional investigations, but with its income fully expended on necessary work, much of which is routine. A slight increase in income would permit work to be greatly extended, while a slight decrease would cause a great reduction in the scientific output. . . . The case is similar to that of almost any successful industrial undertaking, a shop, a hotel, a theatre, a railway, or a steamship. If a steamship line is just paying its expenses, a moderate increase in the patronage will greatly increase the profits, while the expenses will be nearly as great if the boats are run without a single passenger."

After describing the uses made of the Anonymous Gift of 1902 and of the grant by the Carnegie Institution in 1903, the Director goes on to say:

"It is believed that the sum of $50,000 could be expended here to great advantage during the next few years, with results quite out of proportion to its amount."

The needs of the Observatory are stated in particular as follows: Fireproof buildings should be provided for the library, for the photographic laboratory, and for the workshop. They need not be large or expensive; and such buildings, like those in the College Yard, should have names assigned to them, and would form admirable memorials. To supplement the work of the Henry Draper Memorial on stellar spectra, the study of the astronomical photographs should be placed on a permanent basis. The additional sum of $5,000 could well be expended annually in this work. In this way a

vast amount of valuable material could be secured which should be promptly published in the Annals. Meanwhile, the material for several other volumes is accumulating, and should be published at once, or its value will be greatly diminished. Doubtless the future endowments of the Observatory may be large, but these do not provide for our present needs. It has been shown above that an immediate expenditure could be made to great advantage. It is unfortunate that year after year we should be unable to avail ourselves of opportunities now existing.

The total number of volumes in the Library is 11,459 and of pamphlets 24,474. This collection, one of the finest of its kind in the world, is in constant danger of destruction by fire, and is scattered through the rooms of the Observatory. A suitable building to contain it is one of our most urgent needs.

The Visiting Committee trusts that the foregoing review of the work which the Observatory has done and is doing, together with the statement of the rare opportunities which await improvement, will encourage gifts and persuade the givers that their aid will be so used as to produce valuable scientific results.

EDWIN P. SEAVER, *Chairman*,
CHARLES F. CHOATE,
GEORGE I. ALDEN,
SIMON NEWCOMB,
ROBERT T. PAINE,
CHARLES P. BOWDITCH,
HENRY S. HUIDEKOPER,
ANNA P. DRAPER,
CHARLES S. FAIRCHILD,
GEORGE R. AGASSIZ,
ELIHU THOMSON.

FEBRUARY 28, 1906.

CLXXII.

REPORT OF THE COMMITTEE TO VISIT THE LAW SCHOOL.

To the Board of Overseers of Harvard College: —

The Committee to visit the Law School has met the professors and assistant professors of the School in 1904, 1905, and 1906.

At these conferences many matters were discussed, but the School was found, with one exception, to be altogether satisfactory, and for that reason no report was made in the two earlier years.

This report is made solely to comply with Section 28, requiring a report once in three years.

The exception referred to was the failure to build the much needed addition to Austin Hall, or a new building to be used in connection with it. Plans for a new building have at last been approved and are (so the Committee is informed) in the hands of contractors for bids. The Committee hopes that no further delay will occur in the construction of the building, which has long been necessary to the full measure of the School's usefulness.

WILLIAM CALEB LORING,
JAMES T. MITCHELL,
EDMUND WETMORE,
LOUIS D. BRANDEIS,
JOSEPH B. WARNER,
GEORGE PUTNAM.

February 28, 1906.

CLXXIII.

REPORT OF THE COMMITTEE TO VISIT THE MEDICAL AND DENTAL SCHOOLS.

To the Board of Overseers of Harvard College: —

The Committee of the Overseers and others to visit the Medical and Dental Schools met in the Faculty Room, March 5th, at 4.30 P.M. The Dean, the Secretary, Dr. Whitney of the Committee on the Building, were there to receive them. Of the ten members of the Committee five were present, Messrs. Cheever, Sprague, Shattuck, Folsom, and Shepard. An hour was passed in going over the building, and in discussion. No alterations or repairs in the present Medical School building are contemplated. It is for sale; it is ready for occupancy as a Latin School, a Franklin Institute, a branch of the Public Library. It is well adapted for either.

The Medical School will begin in its new buildings on Longwood Avenue at the fall term, in September. The Committee see no occasion to make suggestions.

The Dental School was visited by a Sub-Committee, Drs. Folsom and Shepard, on the afternoon of March 6th, and the same high order of work was noted as on previous inspections by your Committee. The entering class of students this year is less than one-half as large as the graduating class, the requirements for admission having been increased so as to be at least as much as is demanded by the Lawrence Scientific School.

The reputation of the School has attracted men from other states in this country and from England, Holland, Australia, France, New Zealand, China, India, and South Africa.

Something is done each year to raise its already excellent standard of administration and scholarship, so that now there is little lacking except a sufficient endowment and a new building suitable for purposes of instruction and for this great charity.

Six thousand seven hundred and ninety-one patients were treated at the clinic during the past year, and a number at their homes, involving altogether 17,735 operations on the teeth.

Fractures and injuries of the jaw, formerly considered within the province of the general surgeon, now come to the Dental School clinic for the best treatment, usually from 50 to 75 each year.

For the Committee,

DAVID W. CHEEVER,
Chairman.

April 11, 1906.

CLXXIV.

REPORT OF THE COMMITTEE ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY.

To the Board of Overseers of Harvard College: —

Your Committee beg to report on the subjects assigned to them as follows: —

ITALIAN

The courses in Italian have rarely, if ever, been in as satisfactory a condition as at the present time. There are five courses offered: 1 (Elementary), 5 (XVIII–XIX Century), 2 (XV–XVI Century), 10 (Dante), and 3 (Old Italian). Four of these are given this year, Italian 2 (XV–XVI Century) being the only one omitted. The course numbered 2 (XVIII and XIX Century), recommended by your Committee in the report for 1902, and given for the first time in 1903–04, is proving successful. It is pursued by fourteen students this year. It is, moreover, the earnest desire of the Department that it may be given regularly each year. The returns for the past four years show the total number of students to have been for the year ending 1903, 58; 1904, 78; 1905, 69; 1906, 109. Both in regard to the courses given and the number of students pursuing them, the showing of the present year is highly satisfactory.

SPANISH

The Spanish courses, like the Italian, number five: 1 (Elementary Spanish), 5 (XVIII–XIX Century), 2 (XVI–XVII Century), 3 (Early Spanish), and 4 *hf.* (a half-course comprising a general view of Spanish Literature). Two of these courses, Nos. 5 and 3, are alternates. This year three courses are given, 1, 4 *hf.*, and 5, the number of students in each, respectively, being 104, 20, and 40, — a total of 164 pursuing Spanish, or 55 more than in the Italian courses. This difference marks well the inclination of the American student towards utilitarianism, the practical advantages from that standpoint of Spanish over Italian being obvious. These courses are by far the most popular of the five courses, the statistics of No. 2 (XVI–XVII Century) and of No. 3 (Early Spanish) showing

each an average of ten students for the last three years in which they were given (1901–03–05). The fact that Spanish 5 (XVIII–XIX Century) is elected by forty students would indicate, in view of the importance of the course from a practical as well as a literary standpoint, the desirability of removing it from the alternates and giving it yearly, just as with the parallel Italian course, No. 5. Inasmuch as one of the five Spanish courses (4 *hf.*) is a half-course, being given but once a week throughout the year, the Spanish courses as a whole do not appear quite so adequate to the purpose of attaining their maximum degree of usefulness as do the Italian courses — particularly so, in view of the greater number of students pursuing the former. It was suggested (by Mr. Grandgent) that a course in composition would prove very acceptable. It is likely that it would be pursued with equal earnestness by students desiring to use their knowledge in a practical way relating possibly to business, and also by students who wish in this manner to obtain a more perfect command of the idiom than can be acquired in a purely literary course. The principal obstacle in the way appears to be that of finding an instructor competent to handle Spanish and English equally well. Your Committee are of the opinion that such a course — even if only a one-hour course throughout the year — would be elected by more students than either of the classical courses numbered 3 or 2. This in itself indicates the desirability of offering such a course, should the opportunity so to do present itself. In this way, the Spanish courses would be more fully rounded out, as the Italian courses are at present, and thus would more completely and satisfactorily meet the wants of the entire number of students pursuing the Spanish courses.

ROMANCE PHILOLOGY

In the report submitted by your Committee in 1902 the courses in Romance Philology were briefly summarized and favorably commented upon. The nature of these courses precludes their election in general by others than language specialists. They are therefore comparatively small courses. Nevertheless, the beginners' course in this subject, given yearly by Professor Sheldon and numbered 3 (Old French, Phonology, and Inflections), has been elected by twenty-five students this year. The average attendance for the past four years has been eighteen. The course in Provençal, given usually in alternate years and numbered 4, has averaged since 1901 eight students. Professor Grandgent's recent text-book, "An Outline of the Phonology and Morphology of Old Provençal," is a

notable contribution to the subject. Not only in this country but in Europe this work has received the favorable attention of scholars. Last year Professor Ford offered for the first time a course in Portuguese Language and Literature numbered 6 ^{2}hf. This course was elected by twelve students. Any one interested in the studies carried on in this Department, who may visit the courses given, can hardly fail to be impressed with the fine quality of the students pursuing these branches and the superior character of the instruction. This observation applies eminently to the courses in phonetics. The students come from different parts of the world, and are attracted by the remarkably able presentation of the subject. In last year's course in Phonetics, numbered 2*a hf*., conducted by Professor Grandgent, there were two Welshmen, a German, two Frenchmen, and a Japanese, besides the native students. This subject received something of an impetus by the success of the movement recommended in your Committee's report for 1902. The requisite funds were procured as described in the report of 1904. Since then the necessary apparatus has been secured partly in this country and partly in Europe. Most of the apparatus was secured from Dr. W. T. Porter of the Harvard Medical School, where similar apparatus has been in use for some time. The experiments have been in charge of Professor Grandgent. He states that they add much to the interest of the subject and make it clearer. Moreover, the students themselves like to perform the experiments, and an element of increased satisfaction and encouragement has been added. This whole subject bears directly upon the question of simple spelling. The efforts toward solution of this long-standing practical problem have recently received a new impetus by the interest therein of Andrew Carnegie. Your Committee recommend, therefore, in view of the practical importance of experimental phonetics, that the Department be encouraged to continue the instruction along the lines so successfully begun, and that the announcement be made, in describing the course 2*a hf*., that the experimental method along the lines adopted by l'Abbe Rousselot is used, giving the students themselves an opportunity of performing the experiments. Up to the present time, the accommodation for the apparatus has been scanty. It is possible, however, to remedy this next year. A small sum still remains in the treasury for the purchase of apparatus. It is hoped that both accommodation and means may be forthcoming at the proper moment for the advancement of a subject which, particularly at the present time, appears to promise important practical results.

At a meeting of your Committee expression was given to the hope that the day might not be distant when the various language departments could be housed together in a dignified and suitable building, with accommodations for department libraries and museums illustrative of the different periods finding expression in the changing languages and literatures of different peoples and countries. Here is a suggestion worthy of the careful consideration of some future benefactor of the University.

GEORGE B. SHATTUCK,
J. RANDOLPH COOLIDGE, Jr.,
JAMES GEDDES, Jr.,
WILLIAM R. THAYER,
WILLIAM B. de las CASAS.

April 11, 1906.

CLXXV.

REPORT OF THE COMMITTEE TO VISIT THE CHEMICAL LABORATORY.

To the Board of Overseers of Harvard College: —

The Committee of the Overseers and others to visit the Chemical Department and Laboratory of Harvard College, in Boylston Hall, Cambridge, met in the Library at 11 A.M., March 3d. Professor Sanger and the corps of Professors and Instructors met them.

Of the nine members of the Committee four were present, Cheever, Pearce, Folsom, and Crafts. Two hours were spent in going over the buildings, and in discussion. The following Reports are submitted: —

If light and air are desirable in studying Chemistry, they are conspicuously wanting in both Boylston and the basement of Dane Hall.

It is hard to conceive of worse places for this pursuit.

They are unfit, unsanitary, dangerous.

Unfit: because the experiments cannot be seen in the lecture-room; numerous partitions cut off the light; delicate experiments are conducted in cellars.

Unsanitary: because the buildings are over-crowded (used for 800 when there is space for only 400), and lacking adequate ventilation.

Dangerous: because they are fire-traps of great opportunities; pine-sheathing and inflammable contents combine to make them liable to accidental combustion.

There is no room for further expansion, or for laboratory work in several courses which need practical exercises. There is no money; the Department depends on fees. The surplus is eaten up in repairs. A new building would call for $400,000 to $500,000, and maintenance for $20,000 a year besides. To improve the old one will cost $25,000 or more, and it will be money thrown away in the end.

Such is the situation. What is practical and imperative?

1. The immediate fitting up and using of more of Dane Hall, and a new temporary building for research work.

2. Ventilation, by scuttles cut in the roof, by hinging the upper part of the ornate windows as transoms; but this Professor Richards thinks would not be sufficient.

It is pitiable to see a body of self-sacrificing teachers laboring among such obstacles to success, and to their living at all. Instances have occurred where Western candidates have been told never to study Chemistry at Harvard, if they value their health.

DAVID W. CHEEVER.
CHARLES F. FOLSOM.

March 14, 1906.

Dr. David W. Cheever.

Dear Sir, — At your request I enclose the following statements regarding our visit to the Chemical Laboratories of Harvard University, March 3d, 1906.

The Boylston Hall was only partially designed for chemical purposes, and in those parts is good, viz., the smaller lecture-room and the laboratories on the east side, but these rooms are crowded, and have no sufficient or convenient accessory rooms for supplies or physical instruments.

The remaining rooms in this and the Dane building have been changed from other uses to these of Chemistry with considerable ingenuity, and in the best way possible under the circumstances. My impression regarding these rooms may be summed up briefly: having visited many laboratories in this country and in Europe — some modern, some adapted in old buildings — I have seen no body of men of equal eminence condemned to work in such unsuitable quarters; and only those who understand the hindrances can fully appreciate the remarkable quality of the work done. The ventilation is bad, the cellar rooms have only about half the height of ceiling required for laboratories, the west side lecture-room is extremely crowded and inconvenient while the smaller one is so constantly occupied that sufficient time is not given for preparing experiments.

I do not think it necessary to speak of the unsanitary consequences of bad ventilation in the general laboratories, because ordinary acid and ammoniacal fumes are not poisonous, and the students spend only two to four hours per week; so that they suffer nothing worse than discomfort. But the sanitary question does appear serious regarding the special students, assistants, and professors, who spend all their time in ill lighted, over heated, badly aired rooms, constantly hampered by want of space to place scientific instruments.

Yours truly,

J. M. CRAFTS.

Dr. David W. Cheever,
557 Boylston Street, Boston, Mass.

Dear Sir, — I can add nothing to your description of the conditions existing in the Chemical Laboratories. My previous communications on this subject, in various letters and one or two reports, have been of a similar tenor. What is needed appears, at present, to be impossible.

I do not think that any person should work standing upon a cement floor directly on the earth, certainly only those accustomed to such work and wearing shoes adapted to keeping out the always present dampness on such floors; also, the breathing of the air that comes through the cellar windows directly on a level with the ground strikes me as especially pernicious. Alas! the Chemical Laboratories, between ourselves, must be described only as disgraceful.

Very truly yours,

EDWARD D. PEARCE.

My dear Dr. Cheever: —

Let me express my hearty appreciation of your kindness and the kindness of the other gentlemen on the Committee in coming to visit us the other day, and in interesting yourselves so heartily in our serious problems. I am writing not only to express my entire agreement with Professor Sanger's statement of our difficulties, but also to emphasize especially the disadvantages of Boylston Hall as a place for precise research.

Since your visit, I have conversed with a number of my advanced students concerning the effect of their accommodations upon their health. Some do not suffer, but others complain of frequent headaches which prevent them from doing themselves justice either in experiment or reasoning. These headaches are undoubtedly to be traced to the carbon monoxide and other injurious gases arising from incomplete combustion, almost inevitable in heating a vessel by means of a gas flame. There are no hood-accommodations suitable or adequate to receive the many burners needed by research students, and as this building stands, it will be difficult or impossible to add them. Obviously chimneys above all must be planned for in the original erection of a building; and chimneys, in my opinion, are the first need of a chemical laboratory. Compared with this danger from carbon monoxide, that from even the more violent chemical

gases is less serious as regards health, because they may be more easily detected and avoided.

The chemical gases are, however, extremely detrimental to investigations other than the ones in which they are evolved. For example, a little sulphuretted hydrogen or hydrochloric acid can ruin a whole week's work in which the accurate estimation of silver nitrate is concerned.

Moreover, the balance-rooms now in the building are entirely unfitted for their purpose, being without adequate provision for maintaining constancy in temperature, and so badly ventilated as to become very foul and moist from the presence of the excessive number of mingled elementary and advanced students who have to use them.

In short, the conditions in this building are so entirely unsuitable for accurate work, that I often come very near losing patience. In this mood I am inclined to doubt if it is fair to our young men to tempt them into positions in which they are thus obliged to lose time and risk health; and I sometimes question whether under the present conditions, it is right for me to take any research students in precise work at all. This extreme statement would of course not apply to those researches in which great accuracy is not demanded; but such researches do not claim my especial interest.

In thus protesting against the present conditions in Boylston Hall, I am very far from wishing to imply negligence on the part of either the Corporation or the Directors. I think that these gentlemen have done as well as the inadequate funds and unsuitable building have permitted. The President has repeatedly called attention to the need of a new building (*e. g.*, President's Report, 1901–02, p. 49; 1903–04, p. 42).

Agreeing with Professor Sanger in the opinion that a new research laboratory is necessary at once, I am

Yours very sincerely,

THEODORE WILLIAM RICHARDS,
Chairman of the Division of Chemistry.

March 10, 1906.

Dr. David W. Cheever, *Chairman*,
557 Boylston Street, Boston.

My dear Dr. Cheever, — I enclose a communication on the question of transfer of certain courses from Boylston to Dane Hall, as asked for by your Committee at its meeting last Saturday, also a statement of space available in Boylston Hall.

The Division of Chemistry proposes to address the Corporation on the condition of Boylston Hall, but awaits the sending of your report before doing so.

Very truly yours,

CHARLES R. SANGER,
Director.

March 10, 1906.

To the Committee of the Overseers to Visit the Chemical Laboratory,

Gentlemen, — During the visit of your Committee to the chemical laboratories on March 3, 1906, the Director of the Laboratory was asked to state in what way Dane Hall could be used to relieve the existing pressure in Boylston Hall.

The Director desires therefore to state: —

1. That the existing pressure in Boylston Hall is due chiefly to the needs of the higher courses and research courses.

2. In Dane Hall there are three areas of space available, including the quarters now occupied by the Bursar, as follows: (*a*) Upper floor, west; (*b*) upper floor, east; (*c*) lower floor, east, now occupied by the Bursar.

3. The conditions in the basement laboratory, Dane Hall, west, are such as to demand its replacement by area (a), leaving the basement for such work as does not require the presence of numbers of students for any great length of time.

4. This leaves two areas, including the space occupied by the Bursar.

5. The courses which might be removed to Dane Hall may be severally discussed, as follows: —

6. Chemistry 1, inorganic chemistry, now occupying in Boylston, Room A (basement west) and Room B (shed). As the shed laboratory (B) is, except for ventilation, a fairly good room and sufficiently well equipped, it would not pay to give it up for a less comfortable one in Dane. Room A could be exchanged for area (b) in Dane, thus carrying one-half of the course to another building. This would necessitate a separate storeroom in Dane and an increased

service, not to speak of the separation of laboratory instruction. In exchange we should get a room (A) in which we must still put a number of students for much longer hours than the elementary students are now obliged to stay. It does not therefore seem of much use to carry half of Chemistry 1 to Dane.

7. Chemistry 2 has no laboratory work; Chemistry 3 is now in Dane.

8. Chemistry 4, quantitative analysis. New and satisfactory room in Boylston. No object in changing to quarters which would be less favorable to instruction in the course.

9. Chemistry 5*a*, organic chemistry. Might be accommodated in area (b), but at very great expense, on account of the necessary ventilation and accessories. The present room, Boylston, upper west, is specially arranged for the purpose, and, though noisy, is better ventilated than most of the other rooms in Boylston. It seems unwise to change it for a room of less capacity, probably of poorer equipment, and costly to produce.

10. Chemistry 6, physical chemistry, and Chemistry 13, electrochemistry, could not well be carried on in Dane on account of the noise and dirt.

11. The same applied to Chemistry 9, advanced quantitative analysis, and Chemistry 10, gas analysis, which are now in better quarters in Boylston than for some years.

12. Research courses. Position of Dane Hall prohibits the use of that building for these courses. The expense of fitting would also be very great.

Summarizing, the Director begs to say that, in his opinion, the further use of Dane Hall for the Division of Chemistry, except for the removal of the basement laboratory to the upper floor of Dane, is not advisable, since the relief obtained in Boylston Hall by sending over the only available courses would not be commensurate with the expense and the increased difficulty of administration in two buildings.

Finally, the Director wishes to reiterate his former statements (see President's Reports for 1903–04, 1904–05, and elsewhere) that an entirely new laboratory is the only real solution of the difficulty, but suggests that relief may be obtained by building at once a two-story structure for research work, with possibly an auditorium, on the east side of Boylston Hall; this building (*a*) to have substantial walls and structure if no completely new laboratory seems possible, or (*b*) to be of a more temporary nature in case there is a possibility of such a laboratory within five or ten years.

In case the suggestion be made that Chemistry 1 might be moved to areas (b) and (c) in Dane and a research laboratory be built on the shed laboratory as a basis, the following objections may be made: —

1. New quarters must be found for the Bursar, at additional expense.

2. Areas (b) and (c) are not large enough to provide adequately for Chemistry 1, storerooms, preparation rooms, etc.

3. The shed laboratory must be raised from the cellar and made a two-story structure at least.

4. The light of the rest of the building on that side would be cut off.

5. The exposure would be mainly southern.

6. The proximity of the street would be less favorable.

7. The expense of the changes necessary would be little, if any, less than a new addition and the planning of the laboratories more restricted.

The following table shows the courses in which laboratory instruction is given, the desks available in each course, and the number of students in each course at the beginning of each year or half-year since 1899–1900.

Respectfully,

CHARLES R. SANGER,
Director.

March 10, 1906.

	Desks available		Oct. 1899	Oct. 1900	Oct. 1901	Oct. 1902	Oct. 1903	Oct. 1904	Oct. 1905
	Single	Double							
Chemistry *B* (given up) . . Elementary	48	96	64	81	50[1]	..	..	..	..
Chemistry 1 . . . . . Elementary Descriptive	246	492	366	339	353	405	394	382	369
Chemistry 3 . . . . . Qualitative	150[2]		100	132	132	140	132	139	120
Chemistry 4 . . . . . Quantitative	55[3]		47	42	34	49	45	35	33
Chemistry 5*a* . . . . . Organic	66 (Room 11)		28	35	29	23	40	40	43
Chemistry 6 . . . . . Physical	32[4]		15	17	16	12	26	18	28
Chemistry 9 (half) Quantitative Advanced	44 (Room 2)		14	19	15	16	21	28	17
Chemistry 10 (half) Gas Analysis[5]			13	16	21	22	17	20	21[6]
Chemistry 12 (half) . . . . Photochemistry	no special		..	..	..	9[7]	9	6	10
Chemistry 13 (half) . . . . Electrochemistry	no special		..	..	..	6[5 7]	6	4	8[6]
20*abcdef* . . . . . Research	space variable[8]		18	18	25	20	20	19	27
Totals	. . . . .		665	699	675	702	710	691	676

[1] Course given up in 1902.

[2] Figures refer to Dane Hall for 1905–06. Previous figures should read — 98 single, 196 double.

[3] Figures refer to new quarters in Boylston Hall for 1905–06. Previous figures should read 44 single.

[4] Figures approximate.

[5] June 1.

[6] February 1.

[7] Begun in 1902.

[8] The space available for research students cannot be definitely stated, as each man takes up as much as he needs (or as much as he can get). In this way, about 24 single desks in room 11 are used, and about 20 in room 2, according to the number of students in the respective courses at a time, while one room (12) of 23 single desks, and another (4) of 24 desks are used entirely for research men. In general, the minimum space desirable for a research student may be set at four to five single desks.

My dear Dr. Cheever: —

I enclose a former statement of the reasons why a laboratory was needed. I wrote it in 1901, when the late Professor Hill was Director. Almost all of it is as true now as then. I have noted on the statement where changes have been made.

Very truly yours,

CHARLES R. SANGER.

March 10, 1906.

I. The Present Congestion.

1. The present building, Boylston Hall, was built in 1857 for instruction in chemistry, mineralogy, and anatomy. It then contained, for purposes of chemistry, a lecture room, recitation room, laboratory, private laboratory, and storeroom. There were then about 100 students in the required lecture and recitation course, but few laboratory students. In 1870 the third story was added, giving space for many more laboratory students. There were in that year 66 laboratory students, and in 1880, 150. Long before this time the quarters for anatomy had been utilized, but mineralogy and music were still provided for in the building. In 1890 the number of students had increased to 222, and the need for lecture and laboratory space was met by driving out mineralogy to the Museum and utilizing that space. In 1895 the number was 379, which compelled recourse to the basement, in which a large laboratory for 232 men was fitted up. Between 1895 and 1900 every nook and corner in the building which could be utilized had been exhausted, but the number of students rose to 571 in 1900.

2. At the beginning of the year 1900–01 the inevitable happened. Over 600 men applied for desks and there was a waiting list of 40. Eight and one-half per cent. of the Chemistry 1 men failed to get desks at which to pursue work necessary for the course, the work being obligatory for men in the Scientific School. At the beginning of the year 1901–02 the number of men was between 640 and 650 and the waiting list was 52. Ten per cent. of the Chemistry 1 men were obliged to wait. (See note below.)

3. It was not until after New Year's last year (1900–01) that the waiting list was reduced to 0, and this year there are still 25 men without desks at this writing. Under these circumstances, many men drop out from the waiting list or in the beginning did not take the course for fear of not being able to get a desk. (See note below.)

4. The situation is briefly this: The number of students exceeds the accommodations by 7 to 8 per cent., and each year will probably increase this percentage. Every available space has been utilized in the building. The University is therefore not able to make good its announcements concerning chemistry in the elective pamphlet, and, as far as the Scientific School is concerned, is calling upon students to take courses in which they cannot be accommodated.

Note to § 2, 3, 4 above, March, 1906. — The situation outlined above was relieved, as far as the elementary students and waiting list were concerned, by the erection of the shed laboratory in 1902.

II. The Remedy.

1. *Enlargement of Present Building.* — Had the present building been arranged in the beginning with a view to expansion, as is the case with many modern laboratories, an addition might be feasible even as a temporary relief. The construction of the building, however, which is at best ill adapted to teaching chemistry, makes an enlargement a matter of great expense, and the nature of the adjacent ground space necessitates an encroachment upon college roadway and grounds.

2. *Division of Instruction.* — Were another building, temporary or permanent, to be built, or even another building or part of a building to be utilized for additional laboratories, the question of accommodation could be met. But this would be secured at the cost of a double organization, separate storerooms, storekeeper, janitor, and assistants, and a division of the teaching time of professors and instructors. It would involve a large expense for maintenance, it would be wasteful, it would use up the time of professors, and would be demoralizing to a proper system of administration and instruction.

(Note to § 2, March, 1906.) Three years after the above was written, Dane Hall has been used. Much of what was said in § 2 has come true.

3. *New Building.* — It is evident, therefore, that the rational relief for the present overcrowded condition is a new building, which shall be of such a size as to accommodate students for many years to come, and also of such construction that additions might be made in the future at minimum expense and without sacrifice of architectural harmony.

III. Special Reasons for New Building other than the fact of its being the only Means of Relief from the Present Overcrowding.

1. *Advanced Students.* — Though the ingenuity of the Director (then the late Professor Hill) has enabled the department to provide until 1900 for the more elementary students, it has been at the expense of the quarters for advanced men, which are unsuitable and so limited as to warrant the fear that any year the advanced men may have to be put on the waiting list as well as the elementary men. (March, 1906, perilously near this condition now.)

2. *Graduate and other Research Students.* — The quarters provided for graduate and other research students are cramped in space and the facilities for work are meagre. Not only is the laboratory unattractive to students from other and smaller colleges (which often have better quarters), but it is only a question of time when some of those who do come will have to be turned away for lack of space.

3. *Special Investigations.* — The utilization of the available space in the building necessitates sacrifice of general working space needed for special pieces of apparatus.

The location of the building is unfavorable to many kinds of work, owing to noise and vibration.

As the building was not built wholly for a laboratory and has been patched up from time to time to meet growing needs, the arrangement of electric wiring, gas, water, and air piping is unsystematic, hence any re-adaptation for special purposes is inconvenient and expensive.

The windows are loose, admitting dust, — a foe to proper work.

The rooms for balances are small, badly placed, often at a distance from the working room, unevenly heated and badly ventilated.

Investigations have to be carried on wherever space allows. This divides the men under a single professor's instruction among different parts of the building with tiresome flights of stairs between.

The possibility of investigations at very high or very low temperatures, fields of research of the highest scientific and practical importance, is entirely precluded.

4. *Increase of Instruction.* — Owing to lack of room it is impossible to provide for any additional courses in chemistry which demand laboratory work. The department is therefore obliged to give up courses which are much needed in a general or special chemical training.

5. *Lecture Rooms.* — The main lecture room, used only for Chemistry 1, is quite unsuitable for lectures in descriptive chemistry. It has been adapted for the purpose as well as possible, but it has neither the construction nor the facilities for a proper lecture room and its acoustic properties are bad. The two smaller rooms answer their purpose well enough for the present, but are by no means what they should be. (One of these rooms has been converted to research rooms to meet the exigences of this work, leaving one room which is much overtaxed.)

6. *Sanitation.* — The ventilation of the building is poor and has been brought to its present state at large expense. Most of the laboratories are not especially unhealthful if the students exercise due care in disposing of fumes, but the basement laboratory, accommodating 116 men at a time, is low studded, hot and insufficiently ventilated, so that it is an unhealthful place for a student to occupy for many hours.

7. *Danger from Fire.* — The building was not originally built with fire protection, hence, while the re-fitted rooms provide against the danger to some extent, the building as a whole is a dangerous one.

8. *Administration.* — The administration of the building is hampered by the divided laboratories, the lack of relation of storeroom to laboratories, the distance from storeroom to delivery room in cellar and the relation of Director's office to other parts of the building.

9. *Professor's Rooms.* — While the present rooms of the professors are, with one exception, not among the first grounds of complaint, they are still inadequate or unsuitable, and not located with reference to the students under each professor's direction.

10. *Library and Collections.* — The department library, a branch of Gore Hall, which is in one room of the building, includes chiefly chemical journals, of which there should be many more. These, however, are under constant risk from fire. For the latter reason as well as on account of the lack of space, few general books are included in the library. The room is only open to advanced students, by key, as no attendant is provided. There should be, as for example in the Massachusetts Institute of Technology, a large, open library with reference books and journals, in charge of a competent library attendant. The lack of such a library is a great drawback to promotion of research among the students. (Through the generosity of Mr. Mallinckrodt of St. Louis, we now have this room properly fitted up.)

11. *Deserts of Professors.* — In spite of drawbacks the laboratory has done much valuable scientific work. It is only necessary to point

to the recent call of Professor Richards to Germany to emphasize the character of the work done and its recognition. There is no question, however, that the productiveness of the laboratory would be increased and more students attracted if better facilities were given.

12. *Comparison with Other Colleges.* — A comparison with other colleges leaves Harvard in a very inferior position as regards laboratories. Yale has the new Kent laboratory, Columbia the Havermeyer, Chicago the Kent, Pennsylvania the John Harrison, while Bowdoin, Vermont, and many other smaller colleges are proportionately far better equipped.

It is safe to say that no institution of any standing which has 20 per cent. of its students in chemical courses is as badly provided with means of teaching as Harvard.

IV. The Cost.

The building should accommodate 1200 students at once and provision should be made for enlargement at any future time to meet conditions.

It is estimated that such a building would cost $500,000, though it is possible that estimates on working plans would bring this figure lower.

The expense of running the present building is about $12,000 yearly, and this expense is met almost entirely from students' fees, a system of taxation which deters some students from taking courses. It is hoped that in addition to the first cost of building and equipment a sum may be raised which will yield income sufficient to abolish all or a part of the fees. An endowment of $250,000 would meet all present estimates.

(Since the above writing, this sum seems too low. It would be better to say from $300,000 to $500,000.)

CLXXVI.

REPORT OF COMMITTEE ON EDUCATION.

To the Board of Overseers of Harvard College: —

The Committee on Education has held repeated conferences with the head of the Division of Education and with Assistant Professor Norton, and, at the suggestion and with the coöperation of the Committee, Professor Hanus and Assistant Professor Norton have prepared a statement of the provision made for the study of education at Harvard, with a comparison with the opportunities offered in six other universities in the United States.

Your committee is of opinion:

1. That teaching and school administration constitute to-day a profession for which careful and thorough professional training is needed.

2. That Harvard, instead of taking the leadership, has been lagging.

3. That the seven thousand dollars now devoted to this purpose by the University is entirely inadequate.

4. That no new expenditure will make such a return to the University in usefulness and power as a judicious increase in the sum of money devoted to this purpose.

5. That, in the judgment of this committee, there has been a failure in Cambridge to realize fully the conditions and requirements of instruction in the public schools of this country, and a lack on the part of the University in the constructive imagination necessary to appreciate Harvard's opportunity to take the lead in this field of professional training.

JAMES J. STORROW, *Chairman*,
EDWIN P. SEAVER,
JOHN F. MOORS,
WILLIAM TAGGARD PIPER,
GRAFTON D. CUSHING,
FREDERICK P. CABOT,
Committee on Education.

April 11, 1906.

IS NEW ENGLAND'S EDUCATIONAL INFLUENCE DECLINING?

New England colleges and universities, including Harvard University, are far behind other colleges and universities of the country in providing for the study of Education and the training of college-

bred teachers and school officers. Harvard University itself established courses in Education in 1891, some time after such courses had been founded in a number of important universities in the middle West. Such courses had been given in Michigan University since 1879, for example; and many other universities and colleges of the middle West, and some of the far West, soon followed the lead of Michigan. In New England, Brown University has maintained such courses since 1893–94; a year ago Yale University entered the field with a decidedly attractive programme of courses; and all the other New England colleges except Amherst, Williams, and Wesleyan now make some provision for the study of Education.

Teachers College in New York City, however, had been founded in 1888; and since 1898, when Teachers College became a part of Columbia University and began its extraordinary career, and by its success stimulated the study of Education in colleges and universities throughout the entire country, it has become increasingly apparent that, as already stated, the provision for such study outside of New England far surpasses anything New England has attempted. This fact lends strong support to the impression which is rapidly gaining ground that the centre of educational influence has left New England and has travelled southward and westward. Does this impression mean anything less than the loss of educational prestige?*

Little argument is needed to support the proposition that the more effectively a university promotes the study of Education and the more teachers it trains, the more students it attracts. Every good teacher educated at Harvard carries with him the Harvard spirit and ideals, and inevitably, also, helps to turn the tide of prospective students toward his alma mater. A similar statement may be made about teachers trained elsewhere. It is therefore important that Harvard University should realize the extent to which other universities have outstripped Harvard in the provision they have made for the training of teachers, — notably Columbia University, the University of Chicago, and several State universities.

Harvard is Surpassed by Other Universities.

The following three tables show what Harvard University offers to students of Education and the contrast of this meagre offering with the offering of five other important universities: —

* It is worthy of note that the proportion of high school teachers possessing professional training in the far West (California and neighboring States) is nearly six times the proportion of such teachers in the Eastern States. (National Society for the Scientific Study of Education.)

TABLE I

Courses in Education (1905–06)

Note: Seminaries excepted, the figures represent the instruction offered at each institution approximately in terms of Harvard *half*-courses. It is not possible to give exact equivalents, owing to the great variety of ways in which the courses are presented in the different universities. The half-course is adopted as the unit to simplify the figures.

	Harvard	California	Chicago	Columbia	Illinois	Missouri
History of Education	2	4	3	4	2	2
Theory or Principles of Education	2	4	1	4	4	3
Educational Psychology	..	*(4)	6	4	1	2
School Organization and Management	3	3	7	4	1	3
School Systems (Foreign)	1	1	1	1	1	1
Practice-Teaching and Observation	†	5	..	12	2	4
General Method	..	2	1	1	1	..
Methods of Teaching Special Subjects	..	8	20	39	18	13
Seminaries	1	4	1	7	6	3
Miscellaneous	..	3	3	3	1	..
Totals (half-courses)	9	34	43	79	37	31

It will be seen that the offering of Harvard is less than one-third of the offering of the other universities, and scarcely one-ninth that of Columbia.

The following table shows the number of instructors in the Department of Education in the universities already named: —

TABLE II

The table includes only instructors and assistants in the history, theory, organization, and practice of Education. *It does not include instructors in the methods of teaching special subjects*, as, e.g., mathematics, Latin, French, German. The additional provision for such instruction is shown in the next table (Table II*a*).

	Harvard	California	Chicago	Columbia	Illinois	Missouri
Professors	1	1	2	10	1	3
Adjunct Professors	..	..	..	2	..	..
Associate Professors	..	..	1	..	..	..
Assistant Professors	1	3	..	..	3	1
Instructors	..	1	..	3	..	..
Lecturers	..	1	3	2	..	1
Assistants	1	1	..	1	..	..
Totals	3	7	6	18	4	5

* Seminaries.

† Covered inadequately in School Organization and Management.

Instructors in Methods of Teaching various Academic Subjects

TABLE IIa

	Harvard	California	Chicago	Columbia	Illinois	Missouri
Art (Drawing, Painting, etc.)	..	..	3	2	1	1
Latin and Greek	..	1	1	1	2	1
French	..	1	..	1	1	..
German	..	1	..	1	1	1
English	..	..	..	1	4	1
Public Speaking	..	..	1	..	..	1
Music	..	..	2	1	..	1
History	..	1	1	1	3	1
Mathematics	..	1	..	1	2	1
Geography	..	1	2	2	2	1
Botany	..	..	..	..	1	1
Natural Science	..	..	1	..	..	..
Biology	..	..	..	1	3	..
Chemistry	..	1	..	..	1	..
Physics	..	..	..	2	2	1
Manual Training	..	..	6	1	..	1
Physical Training	..	1	1	1	2	1
Domestic Science	..	..	1	4	1	..
Kindergarten	..	..	1	5	..	..
Political Science	..	..	..	..	1	..
Physiology	..	..	..	..	2	..
Totals	..	8	20	25	29	13

From the three preceding tables it is clear that Harvard has the smallest number of instructors in Education, no instructors at all in methods, and that, in general, in all the instruction covered by the tables, Harvard stands at the foot of the list.

Scope of the Teaching Force of Teachers College, Columbia University

The following table shows the scope of the teaching staff of Teachers College, Columbia University, — *the most comprehensive provision for the study of Education in any institution in the world.*

TABLE III

Instructors in Education:	
Professors	12
Instructors	6
Instructors in Methods of Teaching	24
Staff of Model High School	49
Staff of Model Elementary School	40
Instructors in Academic Subjects	60
Total	191

It is to be expected that such a decided contrast between the provision for the study of Education at Harvard and at other universities would ultimately affect unfavorably the number of students of Education at Harvard. The following table gives the number of students enrolled in the Harvard courses in Education since 1892. It will be seen that while there have been fluctuations in the membership of the courses in Education, there was gradual increase in this membership, on the whole, until 1903–04. In that year the number of students enrolled in Education began to decline; and in the following year, 1904–05, was 64 per cent. of that of the preceding year. During the present year there has been a small increase in the enrolment.

Enrolment of Students in the Courses in Education at Harvard University, 1892–1906

TABLE IV

	1892–93	1893–94	1894–95	1895–96	1896–97	1897–98	1898–99	1899–1900	1900–01	1901–02	1902–03	1903–04	1904–05	1905–06
Graduates . . .	4	15	19	33	42	26	54	36	49	25	43	61	31	24
Undergraduates	5	9	25	38	48	50	61	83	88	106	147	121	85	108
Totals . . .	9	24	44	71	90	76	115	119	137	131	*190	*182	116	132

Number and Academic Grade of Students of Education at Harvard and Columbia

In the following tables Harvard is compared with Columbia only. We have no desire to reproduce Teachers College of Columbia at Harvard; we believe we can improve on Columbia's experience. But Columbia, at present, leads the country in the work under consideration, and is therefore the institution to be selected for comparison with Harvard's work in the same field.

The following table shows the number and academic grade of the students in Teachers College, Columbia University, and in the Department of Education at Harvard University in the year 1904–05:

* During each of the years 1902–03 and 1903–04 the income from tuition fees for courses in Education exceeded the cost of those courses by nearly $2000. This fact was ascertained by assigning to every full course one-fifth of a student's full tuition fee ($150), and for every half-course one-tenth of the full tuition fee.

TABLE V

	Harvard	Columbia
College Graduates	31	250
Undergraduates	85	550
Total	116	800

Among the students of Education at Columbia 54 are graduates or former students of New England colleges; and of these, 7 are former Harvard students and 8 are former Yale students; and further, 19 students are graduates of New England normal schools and training schools.

The total attendance on all departments of Teachers College is very much greater than the above figures show. Counting the pupils of the Horace Mann School (the "Model School" of Teachers College) and the pupils of the Speyer School (the "Experimental School" of Teachers College) the total membership of Teachers College in 1904–05 was 3945.

Number and Grade of Teaching Positions Filled in 1904–05 by Harvard and Columbia

That such contrasts between Harvard and Columbia conditions should powerfully influence the appointment of teachers, principals, and superintendents throughout the country is to be expected. The following table clearly shows that it does: —

Teaching Positions filled by Teachers College (Appointment Committee), Columbia University, and by Harvard University (Appointments Office) in 1904–05.

TABLE VI

	Harvard	Columbia
Colleges and Universities	73*	48†
Superintendents of Schools	2	4
Supervisors and Special Teachers (including Principals)	11	138
High Schools, Private, and Endowed Schools (Teachers)	78	128
Elementary School Teachers	..	47
Kindergartens (Teachers)	..	17
Tutors, Companions, and Secretaries	23	6
Normal Schools	2	15
Total	189	403
Other positions		17
		420
Less positions counted twice		73
	189	347

* Including all College and University positions, including only one teacher of Education.

† College and University teachers of Education only.

In studying the foregoing table it should be borne in mind that *all* the teachers sent out by Columbia had enjoyed the professional training of Teachers College; whereas only a small proportion of the teachers sent out by Harvard had had Harvard's professional training. This difference in the technical equipment of the two sets of teachers will, naturally, be reflected in their immediate efficiency and in their professional advancement.

Expenditures of Harvard and of Columbia in 1904–05 for the Study of Education and the Training of Teachers

During the year 1904–05 Columbia spent for instruction and administration in Teachers College $281,974.53, and Harvard spent on its courses in Education $3875. (This sum for Harvard would have been $4875 if the head of the department had been teaching. He was on leave of absence for the year.) During the year 1904–05 Teachers College disbursed $8,237.50 in fellowships and scholarships; Harvard disbursed $500 (a special gift by an anonymous giver). The total expenditure of Teachers College for all purposes during the same year was $1,006,068.05.

Cause of the Development of the Study of Education in Colleges and Universities. The Rise of a Teaching Profession

To understand the development of the study of Education in the colleges and universities of the country, one needs only to recall the extraordinary revival of interest in Education during the past twenty years in all parts of the world, and particularly in our own country, — an interest felt by people of all classes and reflected in our periodical literature. There is scarcely an issue of any important magazine to-day that does not contain an article on Education. The intelligent public are seeking educational leaders and directors of educational affairs, as well as class-room teachers. They demand a teaching profession possessing appropriate professional training.

The Meaning of Professional Training

By professional (technical) training is meant, ordinarily, the study of a portion or all of the following subjects: —

1. The principles of Education, otherwise described as "pedagogy," or as the theory, science, or philosophy of education. These terms are not quite synonymous, and their meaning varies slightly in different cities or States.

2. The general history of Education, for which may be substituted in a few instances the history of a special phase of the subject, such as the history of physical training, manual training, or the education of defectives.

3. Logic and psychology, with especial emphasis upon the various phases of educational psychology.

4. School administration, including the supervision and organization of schools; the observation of school work in all its aspects; and practice teaching.

5. The methods of teaching the several subjects of the curriculum, as Physics, Chemistry, Latin, French, English, German.

6. In numerous instances, a knowledge of the school law of the State in which a license to teach is sought.

The Practical Advantages of Professional Training to Prospective Teachers

A man who has only a college diploma and no technical training for his profession is no longer eligible to appointment in several States and several important cities; and in nearly all States professional training confers important advantages on its possessor. These advantages may be briefly summarized as follows. Professional training is: —

I. A condition of eligibility to take the examination for the license to teach.

The conditions of eligibility, in addition to a college education, are either experience or professional training or a combination of the two. The main point to be noted is that in many cases professional training gives the candidate possessing it a considerable advantage over college graduates not so trained in attaining the right to be examined for the license to teach. Thus, in Boston, all candidates, graduates of the City Normal School excepted, must have had three years' experience previous to the examination, except those who have had, in college, four "professional" courses. These candidates are admitted after two years of successful teaching. In New York City, similar training admits to the examinations college students without previous experience; candidates without this training are not admitted until the end of their third year of teaching. As these two cases fairly represent extremes, it may be said that in the matter of gaining eligibility alone, in several large cities (*e.g.*, Boston, New York City, Chicago, Toledo, Cleveland, Cincinnati) the professionally trained student gains from one to three years over one not so trained. Many cities, it is true, do not grant this

concession, but these cities, as well as the others, usually require an examination in professional subjects, as indicated in the next section.

II. It prepares for the examinations for licenses to teach.

Most cities which set examinations for college graduates include in these examinations both professional and academic subjects. The citation of specific examination requirements in professional subjects in various cities and States will best illustrate this point.

Boston:

1. High school certificate.
   (*a*) Psychology.
   (*b*) Principles of education.
   (*c*) Essay.
2. Grammar school master's certificate.
   (*a*) Psychology.
   (*b*) Principles of education.
   (*c*) Essay.
   (*d*) School organization and administration. (No exemptions.)

Providence (and all other cities in Rhode Island):

(*a*) Psychology.
(*b*) Principles of education ("pedagogy").
(*c*) History of education.
(*d*) Methods of teaching.
(*e*) School law of Rhode Island.
(College courses in these subjects may be substituted for the examination.)

New York:

(*a*) Science of education (for high school teachers).
(*b*) Principles of education (for grammar school teachers).
(*c*) History of education (for grammar school teachers).
(*d*) School management (for grammar school teachers).
(College work may be substituted except for (*a*).)

Newark, N.J., and Paterson, N.J.:

1. Grammar school principals.
   (*a*) History of education.
   (*b*) Psychology.
   (*c*) Principles of education (theory and practice).
   (*d*) School management.
   (*e*) Theory of manual training.
   (*f*) Principles and practice of the kindergarten. (No exemptions.)

2. Other grammar school teachers.
   (*a*) History of education.
   (*b*) Psychology.
   (*c*) Principles of education (theory and practice). (College courses may be substituted.) Data for high school certificates not at hand.

Philadelphia:

1. Supervising principal.
   (*a*) Psychology.
   (*b*) History of education.
   (*c*) Science and art of teaching.
   (*d*) School economy (organization and management).
   (*e*) Philosophy of education.
2. Principals and assistants.
   (*a*), (*b*), (*c*), (*d*), as above.

Chicago (no exemptions):

(*a*) History of education since the Renaissance.
(*b*) General theory (principles).
(*c*) Elements of psychology.
(*d*) School management.
(*e*) Methods of study and instruction.

All cities in Ohio except Cincinnati:

(*a*) History of education.
(*b*) Principles of education.
(*c*) School management.

Cincinnati:

High school (life certificate).
(*a*) History of education.
(*b*) Principles of education.
(*c*) Psychology.

All cities in California:

High school.

Professional training equivalent to one year of work at the State University or other universities accredited by the State Board of Education.

(College work, as above indicated, exempts from the examination.)

The foregoing list is by no means complete, but it serves to indicate the advantage to the student of preparing for these examinations during his college course. It is to be especially remembered that men who do not actually begin their work in these cities frequently wish within two or three years to go to them. Men

without professional training then find themselves at a disadvantage not obvious in many of the smaller cities. The same statement applies to men who begin their work in private schools, and who wish later to enter the public schools. Such training during their college courses occasionally gives men the double advantage of earlier eligibility and direct preparation for the examination.

III. It confers special exemptions and privileges.

The foregoing discussion concerns only the advantages of students professionally trained, in regard to (1) eligibility and (2) direct preparation for examinations. It is to be noted further that where neither of these advantages appears to be given, professional training is often encouraged in other ways. One advantage has been noted in the preceding section; namely, the permission to substitute college work in these subjects for the examination, in certain instances.

The chief advantages, however, accrue to teachers who need or desire State certificates issued to holders of college diplomas. These certificates are intended primarily for graduates of approved institutions within the State concerned; but they are commonly issued upon application to graduates of other universities or colleges who enter the State to teach. In some instances they are given only to applicants who have completed a prescribed group of professional studies as a part of their college work. In other instances such certificates are granted to graduates of approved institutions with or without this training; but students of the latter class are usually required to serve a longer probationary term before the certificate is made permanent, or to pass an examination in professional studies at the end of one or two years, or to satisfy both conditions.

Certificates issued on university diplomas are usually valid in all schools of a State, and they are made permanent at the end of a successful probationary term of one, two, or three years (and the fulfilment of the conditions imposed upon untrained candidates). The following States issue these certificates: —

California	New York	Virginia
Kansas	North Dakota	Washington
Michigan	Pennsylvania	West Virginia
Minnesota	Rhode Island	Wyoming
Missouri	South Dakota	Wisconsin
Montana	Texas	Arizona
Nebraska	Utah	New Mexico
Nevada	Vermont	

In certain States which do not grant these diplomas all candidates are required to pass the State examinations, which invariably include

professional subjects. New Hampshire and Ohio are examples of these States. The latter has already been cited. New Hampshire requires:

(*a*) History of education.
(*b*) School management.
(*c*) Principles of education ("pedagogy").
(*d*) Psychology.
(*e*) School law of New Hampshire.

It thus appears that even in the absence of positive requirements there is a marked tendency in a considerable part of the country to favor the professional training of college students who wish to teach. To the foregoing evidence may be added the opinions of over one hundred representative school superintendents throughout the country (collected by a recent investigator of this subject). Eighty-four of these men preferred, for high school teachers, college graduates with professional training to graduates not so trained; and in Cincinnati, university graduates whose year of training has included four months of practice teaching are placed upon a preferred list for appointment. The superintendent hopes to secure all future teachers from this list.

It is clear, therefore, that the prospects of a college graduate possessing adequate professional training to secure appointment and advancement are far superior to the prospects of a graduate who has not had such training. Hence, also, the number of college-bred teachers who, having entered on their careers without professional training, now desire to return to a university to study their profession is large. The 250 graduate students in Teachers College show that fact plainly enough.

The Three-fold Demand for Professional Training and the Response of Colleges and Universities. Columbia first, Harvard last, among Six Leading Universities

We have then to-day a three-fold demand for adequate provision for the study of Education: (1) The demand of the intelligent lay public, who want teachers of professional insight, interest, and power; (2) the demand of the educational authorities of cities and States who, as the guardians of public educational interests, give effect to the demand of the public by specifying the scope and kind of professional training that members of the teaching profession shall possess, and by insisting on this professional training when local opinion will support such insistence; and (3) the demand of college-bred teachers, now in service, who have had no professional training,

but who have come to feel their need of it, or who have been made to feel their need of it by their official superiors, and desire to return to the university to secure it. In the face of this demand, it is not strange that the most progressive colleges and universities of the country have begun to provide for a comprehensive and critical study of every phase of educational history, theory, and practice, including educational administration; and among these colleges and universities it is clear from what has gone before that Columbia is easily first, and that among the universities named above Harvard is the last. It is clear also, from the foregoing discussion, that with its inadequate teaching force and meagre equipment the Department of Education at Harvard is no longer able to cover adequately the essential minimum of work insistently demanding attention.

The contrast between Harvard and other universities in this respect is not creditable to Harvard. But the important fact is, of course, as has been shown above, that Harvard University thereby fails to attract students to this department in satisfactory numbers. The University therefore loses the opportunity to train its due share of teachers, principals, and superintendents of schools; and hence, in the same measure, the opportunity to influence the education of the country in accordance with its own standards and ideals. The table on page 910 shows that, in comparison with Columbia University, Harvard trains a relatively small number of teachers for the public school service. But if we consider the annual demand in the United States for high school teachers alone, it appears that Harvard's response is insignificant. About 2,500 new teachers (men) are required each year in these schools. In 1903–04 Harvard sent but 14 teachers into this service, and in 1904–05 but 22.

That this situation results in the loss of many students who might be sent to Harvard if more Harvard teachers were sent to the public high schools, it is easy and natural to believe. The data at hand certainly show that Harvard now lacks effective connection with these institutions. In 1904–05 about 3,500 public high schools were preparing students for college. Only 71 of these 3,500 schools sent students to Harvard in 1905, and more than half of these students were contributed by ten schools in Boston and its vicinity.

The number of Freshmen annually entering Harvard from the public high schools has declined from 257 in 1902 to 169 in 1905, and, 1899 excepted, is smaller than at any time since 1896. At the same time the number prepared annually for colleges in these schools *increased* from 6,695 in 1896 to 10,870 in 1903. That is to say, the number of high school pupils preparing for college increased

sixty-two per cent., while the number of such pupils entering Harvard has declined; and in 1905 was less by thirty-three per cent. than it was in 1902.

One way of restoring and extending the connection of this University with the public high schools is by increasing the supply of our graduates in their service. It is precisely in this service that professional training is most generally demanded.

Urgent Need of a Larger and Well-Equipped Division of Education at Harvard

In view of the facts cited in the preceding pages, the instructors in Education urge on the Overseers' Committee and the President and Fellows the immediate necessity of increasing the teaching force and the equipment of the Department (now Division) of Education and the establishment of scholarships and fellowships especially for this Division.

Aims and Organization of the Enlarged Division of Education

To meet the just expectations of those who look to Harvard University for approximately adequate provision for the study of Education and the training of teachers, the aims of our Division of Education should be, as now:

I. To discuss Education as an important function of society as well as of individuals, and hence of interest to all University students whether they intend to become teachers or not.

II. To offer to University students who look forward to teaching the necessary technical training for their vocation, and to teachers already in service an opportunity to study their profession under direction.

III. To offer to University students who have already had experience as teachers, and to all teachers of suitable age and attainments, appropriate training for future activity as principals and superintendents of schools, and as college teachers of Education.

It will be seen that these aims cover provision for two classes of students:

I. Non-professional students who take certain courses in Education as an appropriate part of a liberal education.

II. Students who intend to make Education their profession and students who, having already entered the teaching profession, return to the University for further training. These professional students are naturally grouped as follows:

A. Graduates and other students of suitable age and attainments, but without experience as teachers, who wish to become (1) secondary school teachers, public or private; or (2) elementary school (grammar school) principals.

B. Graduates who are experienced teachers and other teachers of suitable age and attainments who seek preparation for work as (1) secondary school principals, public or private; (2) supervisors of special studies; (3) superintendents of schools in towns and cities; (4) officials of State school departments.

C. Graduate students of suitable attainments and teaching experience who wish to qualify themselves for work as college or university teachers of Education.

To meet the just demands of the foregoing classes of students with approximate adequacy, we need:

I. A larger teaching force.

II. The control of a school to serve as a model school.

III. A permanent fund for the maintenance of the department library and other teaching resources.

IV. Scholarships and fellowships for students of Education.

In explanation of these needs the following brief details are given under each of the foregoing heads:

I. Teaching force.

The teaching force of the Division of Education should consist of

1. A professor of School Administration and of Secondary Education (Professor Hanus).
2. A professor of Elementary Education.*
3. A professor of Educational Psychology.
4. A professor of the History and Principles of Education (Asst. Professor Norton).
5. Ten instructors in methods of teaching the usual studies of a modern school. (Most if not all of these instructors would be employed to give only one half-course each.)

   (*a*) Physics and Chemistry; (*b*) Zoölogy, Botany, Physiology and Hygiene; (*c*) Astronomy, Geology, Geography; (*d*) English; (*e*) History, Government and Economics;

* College graduates are in great demand for positions requiring a thorough knowledge of elementary education, *e. g.*, as superintendents of schools, as teachers in normal schools, principals of elementary schools, supervisors of primary schools, and as teachers in the lower grades of private and endowed schools. Moreover, the way to the superintendency lies through the grammar school principalship rather than through the high school principalship. Persons now in service as elementary school teachers or principals who desire promotion therefore seek thorough-going university instruction in elementary education.

(*f*) Modern Languages; (*g*) Classics; (*h*) Manual Training; (*i*) Mathematics; (*j*) Music; (*k*) Drawing and Art.

6. A professor of Physical Training and of School Hygiene.
7. At least two instructors to assist in carrying on the work of the professors already mentioned.
8. One lecturer or more on Private and Endowed School Problems.

The contrast between the present meagre teaching force of the Division of Education — two professors, and one assistant — with the numerical strength absolutely required for satisfactory work is apparent. This contrast has long been painfully apparent to the Division, and, as already stated, it has been no less damaging to the reputation of Harvard in the country at large.

II. Control of a school.

For illustration, *i. e.*, for the study of the concrete facts and processes of schoolroom experience under the best possible conditions that can be devised, the Division needs a model school. Such a school would not be a practice school; *i.e.*, a school where neophytes learn the art of teaching. Opportunities for practice would continue to be afforded, as now, in neighboring schools. But the model school would represent the best possible school that we could plan in respect to programme of studies, equipment, and teaching force; *i.e.*, it would be, as its name indicates, a *model*. Such a school would be expensive. But its expense could be materially reduced if we could make a beginning with some school already established, and within a reasonable distance of the University; and we hope that such a school can be found.

III. Department library, and other teaching resources.

The Division now possesses a very valuable collection of books to which, however, no additions have been made for some time for lack of funds. It is obvious that a growing library is an indispensable adjunct to the equipment of any department. Moreover, a large amount of the material used in teaching Education is in the form of monographs, reports, and other separate documents that need to be constantly renewed, rearranged, and prepared for work. Without a librarian whose business it is, besides his general care of the library, to procure and classify these materials, the teaching given by the Division naturally suffers. We have, moreover, a valuable collection of recent text-books contributed by publishers. This collection is of great use in all our work, and is also very serviceable to school teachers who are naturally interested in the latest text-books in the several branches of study they teach, and who

consult this collection of text-books, in great numbers, during the session of the Summer School. To keep this collection up to date and to care for it properly requires no little time and attention.

The Division also greatly needs a stereopticon, or a "reflectoscope," or both. As already intimated, the study of school documents is an important part of the work done. At present the Division has no proper means of bringing vividly before a class important documents that must be made the basis of a lecture or a discussion.

A large amount of illustrative material, *e.g.*, charts, and examples of school work done by pupils, is another need. Much of this material would cost but little, some of it would cost nothing; but it is useless to collect it unless it can be properly cared for.

IV. Scholarships and fellowships.

The need of a considerable number of scholarships and fellowships for the Division of Education is also urgent. We need them to help able men whose only capital is their education; and able teachers already in service who desire to study their profession, but whose small salaries nearly always make it impossible for them to save money for such a purpose.

Coöperation of Radcliffe College

For the appropriate development of an important part of the plan outlined above — the training of elementary school principals, normal school teachers, supervisors, and superintendents — Harvard students must have access to a satisfactory course in the aims and methods of the kindergarten. For this purpose it is hoped the coöperation of Radcliffe College can be secured.

Cost of the Proposed Division of Education. An Appeal to the Friends of the University for Aid

To carry out the plan sketched in the preceding pages, *i.e.*, to enable Harvard University to take its proper place beside other important universities of the country in making suitable provision for the study of education and the training of teachers, the University needs money. In concluding this report, we therefore beg to submit the following estimate of the first cost of the plan that has been outlined, and in view of the important ends to be achieved, to appeal to the friends of the University for aid.

Estimated first annual cost of the proposed enlargement of the Division of Education:

Asst. Professor of Elementary Education		$2,500
Asst. Professor of Educational Psychology		2,500
Asst. Professor of Physical Training and School Hygiene, *or*		2,500
Asst. Professor of Manual Training		2,500
Instructors (to act as Assistants) (2)		2,400
Instructors in Methods (10)		2,500
Lecturers on Private and Endowed Schools		500
Librarian and Secretary		1,200
Model School		
8 Teachers	$1,600*	
Principal	500*	2,100
Fellowships (4)		1,600
Scholarships (6)		1,200
Miscellaneous Expenses		1,000
		$20,000

* In addition to the regular salaries.

PAUL H. HANUS,
ARTHUR O. NORTON.

CLXXVII.

REPORT OF THE COMMITTEE TO VISIT THE LIBRARY.

To the Board of Overseers of Harvard College: —

Your Committee have visited the library. Members of the Committee have had frequent conferences with the Librarian and other officers of the University. The Committee have also received and studied reports in writing from the Librarian and members of the Library Council, setting forth the needs of the library, and offering suggestions.

It continues apparent, as it has been apparent to previous Visiting Committees, that the library building is inadequate for its proper purposes and unworthy of a great University. This condition, while unpleasant and deplorable, must be endured under such modifications and perhaps makeshifts as may on occasions be adopted within and without the library, until such time as a benefactor or group of benefactors shall come forward with a gift to the University, sufficiently large to reconstruct Gore Hall, or rebuild on some broader scheme, and to add a suitable endowment for the care and conduct of a great library. We point out such a solution, not as new, nor as one which we know any means of meeting at present, but because we believe if the idea is constantly presented to graduates and friends of the University, it will sooner or later find a munificent response in a beneficent and lasting monument.

Your Committee, impressed with the practical, everyday difficulties by which the administration of the library is hampered and impeded, have given their attention to seeking some remedy to alleviate the present situation, and in such manner as in no way to interfere with or forestall any future plans for the enlargement and extension of the library building. It is understood that the present building cannot hold all the books belonging to the library. Books in great number, of the kind not in current demand, may be and already are kept in the basement of Robinson Hall, and there is room in that place for two or three times the number of books now stored there. It is contended that the policy of keeping volumes and records, little used, in a separate building, distinct and apart from the main library,

offers no serious handicaps to the working value of the library as a whole. Upon this point we do not feel called to form an opinion. It should be observed, however, that this method of keeping books, whether desirable or defective, is at present forced upon us by lack of space, and other persons more competent than we to judge differ as to the advisability of such a plan.

The more serious present inconveniences lie in the lack of room to handle and care for books as they come in and go out, and lack of room for reading and study by students and investigators. Need of more room for such purposes is crying and urgent now and further delay of relief will, it seems to your Committee, be inexcusable. We believe that the accommodations so much needed may be found by building a two-story addition on the north side of the stack room, or easterly extension of Gore Hall. Your Committee have examined plans and drawings for such building, and with the approval of the Librarian and others in authority, we recommend their adoption. The contemplated addition would extend the length of the present stack room; be twenty-six feet in width — the same width as the one-story extension already on the south side of the stack room — two stories high, with a basement, and in construction and appearance to correspond to the main building. It is probably not necessary for us to describe the plans in any greater detail beyond this general reference. There will be thus afforded by the space in this addition, seven or eight rooms of good dimensions, all suitable for the various uses desired by the library force and by persons consulting the books. The cost, we are informed, of building and furnishing will be Thirty-five Thousand Dollars. We are also informed by authority that there is at present in the College treasury available for this purpose — that is, for additions and improvements to Gore Hall, and for no other purpose — a sum exceeding Twenty-one Thousand Dollars.

Should the Overseers approve this report, and the Corporation see fit to carry out the suggestions herein made, the members of your Committee hold themselves ready to provide the money to cover the balance which the estimates show to be needed to make up the total sum of Thirty-five Thousand Dollars required.

Respectfully submitted,

For the Committee,

FRANCIS R. APPLETON,
Chairman.

May 9, 1906.

CLXXVIII.

REPORT OF THE COMMITTEE ON POLITICAL ECONOMY.

To the Board of Overseers of Harvard College: —

The Committee on Political Economy met the Professors in the Department at a long conference. They are able, accomplished, and interesting, and there is, as usual, a very large attendance on their various courses of instruction. These courses deal not only with economic theory, but with transportation, finance, taxation, currency legislation, and banking, economic history, the distribution of wealth, labor, socialism, commercial law, and accounting.

The course on the principles of accounting is taken chiefly by Graduates and Seniors, and it is the purpose of the Department not to sacrifice to it the general and fundamental courses, but to confine it mainly to Seniors or Graduates rather than to follow the plan of some of the Western State Universities in which courses are given throughout the college terms treating in an elaborate way the practical details of business in various branches.

The large attendance in several of the courses in Economics requires subdivisions and conferences, and instructors for such divisions. There is naturally considerable difficulty in securing the desired or desirable instructors, owing to the small salaries that can be afforded and the consequent lack of permanency of employment, and it is much desired that the needed competency and permanency should, if possible, be secured by the assignment of some fellowships to the best of the instructors in the subdivisions and conferences. Much of the time of the Professors might be saved by the addition of various apparatus needed. Some help in this matter has been given by members of the Committee and others.

For the Committee,

ARTHUR T. LYMAN,
Chairman.

May 9, 1906.

CLXXIX.

REPORT OF THE COMMITTEE ON THE SEMITIC LANGUAGES FOR THE YEARS 1893–1905.

To the Board of Overseers of Harvard College: —

It is the custom of the Committee to meet once or twice a year. The meetings have all been held in Cambridge, except one in New York, and one or two in Boston. There has been great regularity of attendance both by the members of the Committee and by the instructors in the Department. There is presented at all meetings a report by the instructors on the year's work, and then follows a consideration by the Committee of methods for increasing the efficiency of the Department.

On November 16, 1905, occurred the death of one of the members of the Committee, the Hon. Stephen Salisbury, of Worcester. Mr. Salisbury had been a member of the Committee since its organization, was faithful in attendance, and ever manifested a lively interest in its deliberations. His presence and counsel will be greatly missed in the future meetings of the Committee.

The development of a Semitic Department at Harvard began with the appointment of Professor Toy twenty-five years ago. Two years later came Professor Lyon. Since 1893 these professors have, from time to time, had the assistance of various men trained in the Department, as Frank D. Chester, 1893–95, George A. Reisner, 1896–97, Macy M. Skinner, 1894–97, and Henry H. Haynes, 1900 to the present. All these men took the Ph.D. degree in the Department.

In 1904–05, while Professor Toy was abroad, part of his work was taken by Professor George F. Moore and part by Dr. Charles C. Torrey, both at that time connected with Andover Theological Seminary. In 1901–02, during Professor Lyon's absence, one of his courses of instruction was given by Professor Maximilian L. Kellner of the Episcopal Theological School in Cambridge. Professor Moore's transfer from Andover to Harvard in 1902 has greatly strengthened the Department, though his time is not all devoted to this subject. At present Professors Toy and Lyon and Dr. Haynes give all their time, and Professor Moore a portion of his, to the work of the Department.

Instruction

In the instruction the changes have not been considerable, except in the direction of expansion. The more important subjects are offered annually. Certain other subjects are offered in alternate years, or as occasion requires. The field is divided into linguistic and historical courses, the latter not requiring a knowledge of Semitic languages. Of the former there are three courses in Hebrew, one in Aramaic, two in Assyrian, two in Arabic, one in the Talmud, two half-courses in Aramaic, one such in Ethiopic, and one such in Phoenician and Aramaic inscriptions. These are all offered for the year 1905–06, except the half-courses in Ethiopic and the Talmud.

Of the historical courses, one deals with the political and social history of Israel, one with Jewish literature prior to 200 A.D., one with the history of the Hebrew religion, and there are half-courses on the history of Babylonia and Assyria, the Bagdad Califate, and the Spanish Califate. The last two are given in alternate years.

There are likewise offered courses of research on Assyrian grammar, Semitic verb-forms, and principles and practice of criticism. At the Semitic Conference, which meets twice a month, a paper is read, "which is expected to give the results of independent investigation of the topic presented."

While it is possible for a student to pursue at Harvard all the leading subjects in Semitic, it is also true that there are many other Semitic subjects which ought to be offered so soon as the resources of the University allow.

Seven men have taken the Ph.D. degree in Semitic since 1893: Frank D. Chester and Willis H. Hazard (1894), Macy M. Skinner (1897), Ismar J. Peritz (1898), Henry H. Haynes (1899), Hall L. Calhoun and Edward E. Braithwaite (1904). Of these Dr. Chester is now United States Consul-General at Budapest; Dr. Skinner is Professor of German in Leland Stanford Jr. University, California; Dr. Peritz is Professor of Semitic Languages and Archaeology in Syracuse University, New York; Dr. Haynes is Instructor in Semitic Languages at Harvard; Dr. Calhoun is Professor of Hebrew and Ancient History in Kentucky University; and Dr. Braithwaite is a minister at Somerville, Massachusetts, the position which he held at the time of taking his degree.

Of other students who have specialized in Semitic study at Harvard since 1893, without taking the Doctor's degree, David W. Myhrman is Docent in Assyriology at the University of Upsala, Sweden; William E. Berry is Professor of Greek and Latin in Penn College,

Iowa; and two are now continuing their studies in Jewish Theological Schools. Of students before 1893, James R. Jewett is Professor in Chicago University (Semitic Department); Maximilian L. Kellner is Professor in the Episcopal Theological School, Cambridge; George A. Barton is Professor of Biblical Literature and Semitic Languages in Bryn Mawr College; James E. Frame is Professor of Biblical Theology in Union Theological Seminary; and George A. Reisner has recently become Assistant Professor of Semitic Archaeology at Harvard University, with leave of absence as explained near the end of this report.

There are three men now working in the Department who are looking towards the Ph.D. degree. There might easily be many more, except that the number of positions for Semitic specialists is limited. In this subject are flourishing departments in several other American Universities, not to mention those of Germany, and the supply is consequently in excess of the demand. For a time, at least, most Semitic specialists, who become teachers of the subject, find it necessary to combine this with some other kind of work.

Semitic Museum

We pass now to the Semitic Museum. The report of 1892 mentioned the collections, which then occupied a room in the Peabody Museum. It was felt to be desirable that these collections, the departmental library and the instruction should all be brought together in one building. In 1899 provision for such a building was made, and about one hundred friends of the Department at the same time contributed nearly $20,000 for further purchases. The building on Divinity Avenue was begun in 1900 and completed in 1902. The transfer of the collections was made in the winter of 1902–03, and the building was formally opened with appropriate exercises on February 5, 1903.

The main structure is about 50 x 80 feet, containing on the ground floors two lecture-rooms and the library, and on the second and third floors two exhibition rooms of 50 x 80 feet. An addition in the rear carries the broad staircase, and contains a lecture-room on the first floor, the curator's room on the second, and a room on the third floor which may be used for lectures or exhibitions. The structure is fireproof.

The exhibition room on the second floor is the Assyrian room, and contains the objects, both originals and reproductions, from Assyria, Babylonia, and the land of the Hittites. The Palestinian room on the third floor contains objects from Palestine, Egypt, Arabia,

Philistia, Moab, Phoenicia, Damascus, and Persia. Many of the objects in this room were collected by the Curator during a year of absence abroad in 1901–02.

These collections illustrate the instruction given in the Department, furnish the means of original research by advanced students, and are a source of instruction to the general public.

The library contains about 1,400 volumes, and is open to all students in the Department.

All the Semitic lectures are given in the Museum building. Several other departments also make use of the building, as that of the History of Religions, and Anthropology. In the latter case we are thus making a return for our long use of the Peabody Museum. The Semitic Museum also houses temporarily the collection of Sanskrit manuscripts belonging to the University, and during the erection of Emerson Hall it has furnished a store-room for the collections of the Sociological Museum. Two of the lecture-rooms are used annually by the Summer School of Theology, to the eminent satisfaction of all who attend that School. The public are admitted to the exhibition rooms from nine to five daily, and large numbers avail themselves of the privilege.

Of accessions since 1902, the most notable are some wooden models from Jerusalem, prepared by Dr. Conrad Schick, representing the Hebrew Tabernacle, the Temples of Solomon and Herod, and the Temple site as it is to-day. Of greater importance is a collection of Syriac manuscripts, some 125 in number, collected during many years by Professor J. Rendel Harris of England, bought in the summer of 1905. The most recent accession is a cast of the famous monument containing the code of laws promulgated by Hammurabi, King of Babylon, about 2250 B.C.

For several years Dr. John Orne has been engaged in preparing a descriptive catalogue of the Arabic manuscripts belonging to the Museum. In recognition of this valuable service the President and Fellows in 1899 gave Dr. Orne the title Curator of Arabic Manuscripts.

Exploration

That we should some day have a share in Oriental exploration has been a hope entertained from the beginning of the Museum. In 1905 provision was made for this object. The President and Fellows thereupon appointed a Committee on Exploration in the Orient, and Professor George A. Reisner has been chosen to conduct the work in the field. Dr. Reisner is well fitted for the post, having had six

years of experience as Director of the Hearst Expedition in Egypt. We have chosen Palestine as the field of our operations for the present, and we are hopeful that the work may begin during the year 1906. By Turkish law, all that is found belongs to the Government, but the explorer has rights to photographs, casts, and publication, and sometimes receives a part of what he may find.

For the year 1906–07 the Curator of the Museum has been granted leave of absence to serve as Director of the American School for Oriental Study and Research in Palestine. It is hoped that the Museum collections may profit by his year in the Holy Land, particularly in regard to objects illustrating modern life in that and the adjacent lands.

Very respectfully,

JACOB H. SCHIFF,
Chairman.

MAY 9, 1906.

CLXXX.

REPORT OF THE COMMITTEE ON MATHEMATICS.

To the Board of Overseers of Harvard College: —

Your Committee to inspect the Department of Mathematics have completed their examination, and beg respectfully to present the following report: —

The Committee found the teaching in such courses as they were able to examine to be excellent, and from inquiries believe it to be so in the other courses, and they found the professors and other instructors in Mathematics a very harmonious body, devoted to their work and to the building up of the Department.

For this admirable spirit the highest praise is due to the late Professor James Mills Peirce, with whom no one could associate without being inspired by love, enthusiasm, and devotion to work. The Committee hope that some fitting memorial of his long, faithful, and brilliant service to the College will be established.

The Committee believe that the College is so fortunate as to have in Professor Byerly a man unusually well fitted for the position of head of the Department, and they strongly recommend that he be retained in that place, to which he has now naturally succeeded. He is an inspiring teacher, a great favorite with his students and with the other instructors of the Department, and a mathematician of not inconsiderable fame.

To keep up the attendance and interest in Mathematics, and at the same time to maintain a high standard, is a difficult thing under an elective system in a large university where so many attractive and valuable opportunities are offered. The courses in Mathematics will always be what are called "hard courses," requiring, of necessity, a great deal of outside work and prolonged study of abstract propositions and of formulae and symbols, for which the student can see no immediate use, but with which, in order to prepare himself for future progress, he has to make himself thoroughly familiar. Professor Byerly has always successfully endeavored to arouse and hold the interest and attention of the students by presenting to them for solution real, everyday problems, which show them, as they advance, the uses of the dull work which has gone before and is to follow.

He has thus been able to inspire the students with enthusiasm and to carry them to a higher point than he would otherwise have been able to do, while, at the same time, he has left them with a mastery of the subject which could not be acquired without such actual use. The merits of this method are appreciated by the whole Department, which in consequence has become one of the best to be found in any American college.

For these reasons among others, your Committee believe that the interests of the University require that Professor Byerly should remain at the head of the Department, whether he continues to hold his present professorship, or succeeds to the Perkins professorship, left vacant by Professor Peirce's death.

The question then arises whether the vacant professorship which will in either case remain should be filled by the promotion of one of the assistant professors, or by the selection of some one outside. Your Committee believe the Department is a very strong one, and that several of its members are well entitled by their achievements to promotion. On the other hand, they recognize also the advantages which may sometimes accrue to an institution by the infusion of new blood. If it should be decided to take an outsider, they hope that a mathematician of the highest rank will be selected, and one who has a world-wide reputation in the part of the field where the science is now making its most important progress.

WILLIAM L. PUTNAM,
PHILIP STOCKTON.

JUNE 13, 1906.

CLXXXI.

REPORT OF THE COMMITTEE ON GEOLOGY, MINERALOGY, AND PETROGRAPHY.

To the Board of Overseers of Harvard College: —

The Committee met the officers of the Department, in Cambridge, on December 23, 1905.

The lighting of the Mineralogical exhibition rooms by Nernst lamps has now been in successful operation for more than a year. The valuable loan collection of Tourmalines is still on exhibition.

Since the last report, by erecting a substantial platform on the roof of the Geological Section of the University Museum, a meteorological observatory has been established for the use of students in Meteorology and Climatology. Several instruments have already been installed, and additional instruments will be purchased as opportunity occurs. A portion of the attic directly beneath the platform will later be adapted as an instrumental work-room.

Through the kindness of Mr. Robert W. Sayles, $5000 has been given to establish a fund, the income of which is to be used for the acquisition of collections suitable for the Geological Section of the University Museum.

The ventilation of the laboratories has been still further improved.

The Gardner Collection has been increased by the addition of slides and photographs. Considerable time has been spent in repairing and rebuilding slides, and in making negatives from original materials.

Unfortunately, through lack of money, there has been a tendency to diminish field work, and it is a pity that a fund cannot be established to develop this important branch of the Department of Geology and Geography.

The Committee beg to refer to the suggestions made in their Report of last year in regard to the pressure for expansion, and wish to commend the efficiency and zeal of the Department.

The Committee feel deeply the loss of Professor N. S. Shaler, who for over forty years has devoted himself unsparingly to the interests

of the Department of Geology. The present position of the Geological and Geographical Departments is largely due to his devotion and energy.

For the Committee,

R. L. AGASSIZ, *Chairman.*

JUNE 13, 1906.

CLXXXII.

REPORT OF THE COMMITTEE ON ANCIENT HISTORY, MEDIAEVAL HISTORY, AND ROMAN LAW.

To the Board of Overseers of Harvard College: —

Your Committee on Ancient and Mediaeval History and Roman Law beg leave to submit the following report: —

The Committee have examined the lists of courses included in their subject, have had before them the final examination papers for the last two years and the mid-year examination papers for the current year, and members of the Committee have talked with the instructors, have attended certain lectures in the class-rooms and three of the general examinations for the degree of Ph.D. The Committee desire to express to the members of the Department their thanks for the assistance given them in making their investigation.

The courses will be discussed in their order: —

History 1a, Mediaeval History (introductory course). — This course is intended primarily for undergraduates, and is, and always has been, an introductory course to be taken by Freshmen and Sophomores. A course of this general nature has been given for many years, and the course was formerly described, we believe, as a course in European History to 1789. In 1902–03 the instructor and his assistants undertook to cover the field of both Mediaeval and Modern European History, and the course had the large attendance of 488 students. In 1903–04 Mediaeval History was dropped and Modern European History alone given, and in that year 346 students were enrolled. It would seem that at that time, judging from the number of students enrolled in more advanced courses, the interest in the study of Ancient and Mediaeval History fell to a low ebb, and the Department decided to devote this introductory course to the study of Mediaeval History in order to arouse in the students an interest in the subject. In 1904–05 388 students were enrolled, and in 1905–06 the attendance was large enough to practically fill the lower floor of the New Lecture Hall, and we cannot speak too enthusiastically of the interest and attention shown by the students, which is after all the greatest possi-

ble tribute to the instructor. The course covers a wide field and is conducted along popular lines, the aim of the instructor being both to arouse interest in the study of history and to teach the students to read intelligently. An extensive course of reading is recommended, their attention being called to the best authorities on the subject to be read in connection with the lectures. For this purpose a printed pamphlet is issued to the class, giving the chapters and pages in a considerable number of books to be read each week. Whether this is the best system to teach men to read intelligently is doubtful, for there does not seem to be any stimulus to the inquiring mind. On the other hand, it is said that the average student will not read at all unless his attention is directed specifically to the few pages bearing on the subject for the particular lecture. We have no doubt that at lectures and section meetings there is a general talk on books and how to use them, but we feel that there should not be so many specific references that the whole reading time of the student is taken up.

The danger in an introductory course, conducted as this is, is that students may be satisfied with the knowledge of the subject obtained and turn to other fields rather than pursue the real work of one or more periods of history. It is claimed by the Department that this is not a real danger, and they expect to see a renewed interest in the study of History which will be shown in an increased enrolment in the advanced courses. Whether they are right is yet to be seen, but the Committee are inclined to agree with the Department.

History 2, History of Greece to the Roman Conquest.—This course is conducted by Professor J. H. Wright of the Greek Department and is given in alternate years. In 1903–04 11 undergraduates and 5 graduates were enrolled, while this year there were 26 undergraduates and 4 graduates, showing an increased interest.

History 3, Roman History to the Reign of Diocletian.—In 1902–03 interest in the subject was at a low ebb, as only 3 undergraduates and 3 graduates were enrolled, which seems extraordinary in a great university, for the course in question is the only course on Roman History given unless the course on Roman Law be so considered. When given in 1904–05 34 students were enrolled — a most gratifying increase — and your Committee are informed that the class was a very satisfactory one to the instructor, and it is hoped that next year an added interest will be shown and that many of those who have taken History 1 will wish to go back in time and acquire a real knowledge of at least one of the great periods of History. It is to be regretted that only 23 members of last year's class were undergraduates.

History 4, History of Mediaeval Institutions. — The purpose of this course is stated to be the tracing of the general development of the mediaeval institutions of Continental Europe from the time of the Roman Empire to the close of the Fifteenth Century, and it certainly should be of great interest to any student intending to pursue the study of History or Government. The course thus far has been wholly unsuccessful. In 1902–03 it was taken by 4 graduates, in 1903–04 by 5 graduates, and since then has been omitted, and it is to be omitted again next year. A course upon the study of the mediaeval institutions is bound to be a difficult one, however valuable, and the causes which lead students of to-day to avoid such courses are worthy of serious consideration.

Courses in Church History. — There are four courses which may be classed together under this head, all conducted by Professor Emerton. The subject is of absorbing interest, and from twenty to twenty-five years ago the only course then given, although difficult, was enthusiastically received and a great deal of earnest work done. These courses have always been admirably conducted and yet they now seem to be neglected.

History 5a, History of the Formation of the Catholic Church. — This is a half-course given in the first half-year. It was given in 1903–04 with 11 undergraduates, 2 graduates, and 4 Divinity students. It has not been given since.

History 5b, History of the Roman Papacy and the Holy Roman Empire in the Middle Ages. — This, too, is a half-course given in the second half-year, and it would seem that students would take *5a* and *5b* in the same year. In 1903–04 33 undergraduates, 4 graduates, and 2 Divinity students were enrolled, and the course has not been given since.

History 6, General Church History to the End of the Seventeenth Century. — In 1902–03 18 students were enrolled. There were 6 undergraduates, 2 graduates, and 10 Divinity students. In 1903–04 12 were enrolled but only 1 undergraduate. In 1904–05 8 were enrolled, among whom were 2 Seniors and 1 Junior. The course was omitted in 1905–06.

History 7, Era of the Reformation in Europe from the Rise of Italian Humanism to the Close of the Council of Trent. — This is the course referred to above as being very popular in the past. It was given in 1904–05 for the first time in two years and there were only 14 students enrolled, and of these only 3 were undergraduates. In 1905–06 23 students were enrolled, of whom only 7 were undergraduates. We are informed that this course is conducted on

the same lines as formerly and is no more difficult, and yet it was formerly one of the largely attended courses among the advanced courses, and was taken almost wholly by undergraduates. All of Professor Emerton's courses are to be omitted in 1906–07, and it is to be hoped that when he returns a new interest will show itself. It seems extraordinary that in one year only 3 and in the next year only 7 undergraduates should elect the only course given on the Reformation.

History 8, History of France to the Reign of Francis I. — This course shows more than any other how little the importance of the subject appeals to the students, although it is gratifying to note that there has been a steady increase in interest. The following table of attendance is interesting: —

1902–03,	8	students:	6	undergraduates	and	2	graduates.
1903–04,	9	"	8	"	"	1	graduate.
1904–05,	15	"	10	"	"	5	graduates.
1905–06,	28	"	22	"	"	6	"

This course covers in detail the History of France to the Treaty of Verdun, and, as stated in the descriptive pamphlet of the Department of History, all the leading events of French History and the chief features of constitutional development are considered. It is certainly amazing that so important a subject should have been elected by such a small number of students.

History 9, Constitutional History of England to the Sixteenth Century. — This again is a course which has been given on similar lines for many years, and has until recent years been one of the big courses of the University. Again the table of attendance is of interest: —

1902–03,	35	students:	27	undergraduates	and	8	graduates.
1903–04,	66	"	49	"	"	17	"
1904–05,	34	"	22	"	"	12	"
1905–06,	34	"	22	"	"	12	"

Both of these courses are well conducted, and there is no reason within the Department why History 9 should not have an attendance of at least 200.

Harvard sends a large number of men into its Law School each year, and yet it would seem from this data that only a small proportion have given any attention to the study of the constitutional history of England, or what might be called the beginnings of the common law.

History 17, Introduction to Greek Constitutional History. — This is a half-course intended primarily for graduates. It may be taken as part of the research course, History 20*i*.

This course and History 2 are apparently given in alternate years, and it would seem that a student having taken History 2 would wish to pursue the study of Greek History further, but in 1903–04 only 6 students were enrolled, 2 undergraduates and 4 graduates; and in 1904–05 only 5 students were enrolled, 3 undergraduates and 2 graduates. It was omitted in 1905–06, and is to be omitted again next year.

History 21, Introduction to the Sources of Mediaeval History. — This is a half-course given the first half-year. One graduate was enrolled in 1902–03, 4 graduates in 1903–04, 4 graduates in 1904–05, and 6 graduates and 1 Senior in 1905–06.

History 22, Elements of Latin Palaeography. — This is also a half-course given the second half-year, and was given for the first time apparently in 1905–06, and was taken by 7 graduates and 1 Senior.

History 4 (the study of Mediaeval Institutions) having failed to attract students, it was not to be expected that interest would be shown in the more advanced courses in Mediaeval History, but it is to be hoped that Professor Haskins' influence upon the students in History 1 will create a new interest and thereby bring about a larger attendance in these more advanced courses in Mediaeval historical study.

History 26, History of Christian Thought to the Eighteenth Century. — This course seems to be regarded by the undergraduates as entirely beyond them. In 1903–04 11 students were enrolled, 1 undergraduate, and in 1905–06 9 students were enrolled, with 2 undergraduates.

There are several Courses of Research offered to students by Professors Emerton, Gross, Haskins, and Wright, but in 1902–03 and 1903–04 there were no students. In 1904–05 Professor Gross's course on English Institutions in the Middle Ages had only 2 graduates, and in Professor Wright's Greek Constitutional History only 1 graduate. In 1905–06 Professor Emerton had 1 graduate student, Professor Gross 2, and Professor Haskins 3.

These Courses of Research are now intended for graduate students, but in the past they have been taken by undergraduates devoting themselves seriously to the study of History, and possibly some action might be taken by the members of the Department to urge some of the best of their students in the undergraduate body to take these courses as well as some of the courses marked primarily for graduates, and not make them feel that the advanced courses are beyond their reach.

Roman Law (*Government 5*). — In our last report to the Board of Overseers we called attention to the unsatisfactory teaching of Roman Law. At that time it seemed a disputed question as to whether it should be taught in the Law School or in the College, and we emphasized the fact that in spite of its name it was a course in history or government and not a course in law. Since that time the course has been consistently taught by the College in accordance with our recommendation, and the result is gratifying. From its nature it will attract only those students who have a special reason for taking it. Obviously a large majority of these will be students intending to take up the study of the law as a preparation for entrance to the legal profession. We consider the course well arranged to meet the needs of these students. The course is general in its scope and is valuable for the student who desires to specialize in Roman history or in Roman governmental institutions.

We have not given any consideration to the course on the Origin and Development of Municipal Government in the Middle Ages (Government 9) but hear it well spoken of.

We have to-day an enormous student body and an immense list of elective courses open to them, and an examination of the Official Report of the President and Treasurer tends to show that certain general courses, such as History 1, Government 1, and Economics 1, are largely attended and there seems to be a tendency towards the study of Modern European History, but there seems to be no doubt that the study of Ancient and Mediaeval History is neglected, and that the attendance at all the courses after History 1, an introductory course, is unworthy of the subject, of the instruction given, and of the University.

We have already pointed out that we hope History 1 will revive interest in the study of Mediaeval History. We do not feel ourselves competent to express an authoritative opinion upon the cause of the decline in interest, but will only suggest possible causes for the decline. An instructor, in referring to the courses in Modern European History, spoke of them as touching more on the narrative side of history. Possibly, in sub-dividing the courses on Mediaeval and Church History, the members of the Department have leaned too far towards special work, overlooking the fact that a little of the romantic or narrative side would add zest to the study of institutions and of doctrines.

We have said that there is a tendency towards the study of Modern European History, but we find that in 1904–05 History 12*a* and 12*b*, two half-courses, together covering English History from 1688, were

taken by 74 and 77 students respectively, and History 16*a* and 16*b*, two half-courses, together covering the History of Continental Europe from the Peace of Utrecht, were taken by 179 and 159 students respectively. These courses cover the same grounds as History 10 and 11 of twenty-five years ago, and it is interesting to note, in view of the great increase in the number of students in the University, that the records show that in 1883 84 students were enrolled in History 10, and in 1884 111 students in History 11.

In past years there have been a considerable number of undergraduates who have gone deeply into the study of History and have taken final honors. We are informed that the number of men coming up for final honors has steadily diminished, and this year in the Department of History and Political Science, comprising History, Government and Economics, only 8 men presented themselves for final honors, and only in one to two instances did the candidates present courses in Ancient and Mediaeval History.

The causes for this change are to be found, in our opinion, in the attitude of the students of to-day towards education. There are many in each class who have no particular ambition except to get through, and possibly in the wide field given to elect from there may be enough courses to enable them to obtain their degrees with a minimum effort. We were struck by the fact that in 1902–03 a course in Spanish History to the death of Philip II was given in which 76 students were enrolled, whereas in the same year the course on the Constitutional History of England to the Sixteenth Century was taken by 35 students, and the course on the History of France to the Reign of Francis I by 8 students. It is also perhaps noteworthy that in 1904–05 a course on the life of the Ancient Athenians was taken by 118 students, and the History of the Greek Drama by 134. There is also a large class of ambitious students who are eager for the work of life, and with the chance given them to take their degrees in three years they give up all idea of taking enough courses to qualify for honors, and elect what might be called practical courses rather than the courses that may be said to be part of the education of a man of culture, and a man trying to get his degree in three years will undoubtedly think twice before taking a difficult course like History 9. Other students regard their education from a purely utilitarian point of view, and in electing their studies act solely with the idea of preparing themselves for the business or profession they propose to adopt on graduation.

Without reflecting in any way upon the present members of the Department, we wish to call attention to what seems to be a tendency

to raise special work and special knowledge too much above a general knowledge of History, and we are now referring more particularly to the work of candidates for the degree of Ph.D. In the great majority of cases men taking these degrees intend to become teachers, and we feel that the Department is not strict enough in insisting on courses of general reading and a more thorough preparation for the general examinations. A man may devote years of study to a particular century or a particular subject, and yet if he hasn't a general knowledge, and if the idea of culture is not strong within him, he may accomplish something, he may write a book on his special subject, but he will never be a great teacher.

This lack of general knowledge was shown by all three of the candidates for the Ph.D. degrees whose examinations one of your Committee attended. We understand that the candidates themselves object strongly to the general examinations, and it seemed to us that the members of the examination committees were in at least two cases very lenient. We do not think that the candidates should be put through a rigid examination in History 8, 9, 12, 14, or whatever courses they present, but we do think that before taking his special and final examination for the degree of Ph.D. at Harvard the candidate should show that he possesses a general knowledge of History and constitutional and political development. In one instance, where the candidate had graduated several years before, he was excused from examination upon certain periods and subjects because it was some years since he had taken the courses in those subjects. This seems to your Committee a mistake. The A.B. degree with honors in History and, to a greater degree, a Ph.D. degree based upon historical study should denote the general knowledge of History expected in an educated man and a knowledge that will be an incentive to the student to continue his reading.

JOHN NOBLE,
ROGER F. STURGIS,
ARTHUR P. STONE,
JAMES T. MITCHELL.

June 13, 1906.

CLXXXIII.

REPORT OF THE COMMITTEE ON FRENCH.

To the Board of Overseers of Harvard College: —

It will be remembered that the Visiting Committee has in past reports urged the necessity of enlarging the opportunities offered to students for acquiring a working knowledge of the French language, in order that they might at least be able to put to practical use the knowledge acquired in the class room.

In this connection, the experiment of offering voluntary courses in composition and conversation, which was tried two years ago, showed a desire on the part of the students to take advantage of the opportunities thus offered to them.

During the past year these opportunities were somewhat enlarged, and for the coming year they will be still more so. Last year French 4, a course in composition and conversation, was increased to four hours a week, and became a regular course, counting for a degree; while for the coming year French 3, which is intended for practice in speaking and writing and for a training in pronunciation and idiomatic phrases, will be used as a feeder to French 4; and French 5, an advanced course in composition, will include oral discussion in French by the pupils.

Courses 4 and 5 will be conducted entirely in French. This will amount to one full, and two half-courses of four hours a week each, which are intended especially to develop the practical knowledge which is needed.

But although the Visiting Committee is able to report this progress in the practical application of the language, it would like to see a much larger proportion of the nine hundred students who follow French engaged in it. The practical difficulties of dividing such a large body of students into divisions small enough to enable every man to take part in the conversation would have to be met.

Williams College began the experiment of splitting up its elementary classes in French into small divisions with such success that it has been extended to all the departments except History. Possibly, means might be found for the practice at Harvard. The students would certainly be greatly benefitted by it.

The Department will be strengthened this coming year by the addition of Messrs. Allard and Baulig, both Frenchmen, and the kind of appointments which the Visiting Committee has urged.

The elementary courses, taught by the younger graduates, seem to be satisfactorily carried on; but the Visiting Committee repeats its hope that men of larger acquirements and experience should be placed in charge of the elementary courses.

Respectfully submitted,

J. TEMPLEMAN COOLIDGE, Jr.,
GORDON ABBOTT,
HOWARD GARDINER CUSHING,
CHARLES J. BONAPARTE,
FRANCIS McLENNAN,
JAMES H. HYDE,
THOMAS RUSSELL SULLIVAN.

June 27, 1906.

CLXXXIV.

THE REPORT OF THE COMMITTEE TO VISIT THE BUSSEY INSTITUTION.

To the Board of Overseers of Harvard College: —

The Bussey Institution, one of the earliest schools of agriculture in the United States, was founded more than thirty years ago. For the first twenty-five years of its existence the number of its students was never large, and for the last ten years the attendance at the school has not materially increased, nor, so far as we have been able to learn, has any scientific discovery or any improvement in the methods of practical agriculture or horticulture been made by the school during these years. As a means of obtaining better results from the Institution, it seems to your Committee that the time has come when something should be done to bring about a closer union between the Bussey and the Arnold Arboretum. With the splendid equipment of that institution, at the very gates of the Bussey, the best possible opportunity would be afforded for the study of insects injurious to vegetation. A scientific and practical study of this subject in its various branches would be important to the gardener, the farmer and forester alike. In its scope it might include an investigation of all creatures that prey upon these insects, and especially of parasites. At this time, when thousands of dollars are being expended annually merely to keep in check the gypsy and brown-tail moths, until such time as can be determined whether or not the imported parasites will be effective, an institution which could supply the desired information as to these parasites would accomplish a great work for the state and country. If such work had been started on a scientific and practical basis at the time the first money was expended for the extermination of the gypsy moths, it is probable that to-day we should be in a position to prevent the spread of both gypsy and brown-tail moths. Among the parasites may be mentioned those which attack scales and which have been used with so good effect in destroying the scales on the citron trees in California. The scales which are now infesting our lilacs should be treated in like manner. The tree-borers, which have practically destroyed our locusts, and seriously injured many of our pine trees, are also preyed upon by parasites. Closely allied to the study of insects injurious

to vegetation are the diseases of plants. A properly equipped laboratory for the study of these diseases might also be added to the Bussey. Your Committee recommends that along these lines, at least, the Arnold Arboretum and the Bussey Institution should work together for the good of the community.

For information as to the different departments of the Bussey Institution, the Committee would refer you to the Annual Catalogue of Harvard University and to the reports of the former Visiting Committees.

FRANCIS HENRY APPLETON,
MOORFIELD STOREY,
J. ARTHUR BEEBE,
WALTER C. BAYLIES,
C. MINOT WELD,
JOHN LOWELL,
CARROLL DUNHAM,
AUGUSTIN H. PARKER.

October 10, 1906.

CLXXXV.

REPORT OF THE COMMITTEE ON REPORTS AND RESOLUTIONS.

To the Board of Overseers of Harvard College: —

The Committee on Reports and Resolutions respectfully submits the following: —

During the last academic year, reports have been received from the following visiting committees: —

1. On the Course in English Literature, Sept. 27, 1905.
2. On Physical Training, Athletic Sports, and Sanitary Condition of all Buildings, Dec. 13, 1905.
3. On the Course in Engineering, Dec. 13, 1905.
4. On the Administration of the University Chapel, Dec. 13, 1905.
5. To visit the Arnold Arboretum, Dec. 13, 1905.
6. To visit the University Museum and the Museum of Comparative Zoölogy, and on Zoölogy, Dec. 13, 1905.
7. On Government, Jan. 10, 1906.
8. To visit the Observatory, Feb. 28, 1906.
9. To visit the Law School, Feb. 28, 1906.
10. To visit the Medical and Dental Schools, April 11, 1906.
11. On the Courses in Italian, Spanish, and Romance Philology, April 11, 1906.
12. To visit the Chemical Laboratory, March 14, 1906.
13. On the Course in Education, April 11, 1906.
14. To visit the Library, May 9, 1906.
15. On the Course in Political Economy, May 9, 1906.
16. On the Course in the Semitic Languages, May 9, 1906.
17. On the Course in Mathematics, June 13, 1906.
18. On the Courses in Geology, Mineralogy, and Petrography, June 13, 1906.
19. On the Courses in Ancient History, Mediaeval History, and Roman Law, June 13, 1906.
20. On the Course in French, June 27, 1906.
21. To visit the Bussey Institution, Oct. 10, 1906.

Under the provisions of Section 28 of the revised (1902) Rules and Bylaws of the Board, the several visiting committees are

instructed to report in writing at least once in three years. The following have apparently failed to meet this requirement: —

1. The Committee on the Classics.
2. The Committee on Philosophy has made no report since November, 1896.
3. The Committee on Composition and Rhetoric has made no report since June, 1897.
4. The Committee on Germanic Languages and Literatures has made no report since 1901.
5. The Committee on Mining and Metallurgy has made no report since 1901.

Of the committees specified as delinquent in the Report of this Committee of Oct. 27, 1905, the Committee on Engineering has made a report; so also have the Committees on Government, on Semitic Languages, on Mathematics, on the Chemical Laboratory, on Physical Training, on Athletic Sports and the Sanitary Condition of all Buildings, on the Observatory, on the Arnold Arboretum, and on Ancient History, Mediaeval History and Roman Law.

The reports handed in by committees during the last year, twenty-one in number, were not only more numerous than usual, but exceptional both in interest and value. Especially was this the case with the following: —

Report of Committee on English Literature.
" " " " Engineering.
" " " " Government.
" " " to visit the Observatory.
" " " " " Chemical Laboratory.
" " " on Education.
" " " to visit the Library.
" " " on Ancient History, Mediaeval History, and Roman Law.
" " " to visit the Bussey Institution.
And, finally, the Report of the Special Committee on the Courses of Instruction in charge of the Faculty of Arts and Sciences.

While all of these reports were comprehensive, indicating in each case a thorough understanding of the Department, Course, or matter under consideration, three Reports, that of the Committee on Engineering, that of the Committee on Government on the amount of time given by members of the Faculty of Arts and Sciences to administrative duties, and that of the Special Committee upon the Courses of Instruction in charge of the Faculty of Arts and Sciences, dealt with problems in the practical administration of the College

and University which are at this time exciting special interest. In view of discussions likely soon to arise over propositions to be acted upon by the Board, the Committee would strongly recommend to all members of the Board a careful study of the above reports. Such a study on their part will contribute materially to intelligent action on the issues presented.

During the past year the Committee on the Course of Instruction in Semitic Languages was ordered to be dropped, by vote of the Board of March 14, 1906, and a new Committee was provided to visit the Semitic Museum and Division of Semitic Languages and History. Also, by vote of the Board of May 9, 1906, a special, though standing, committee was provided under the following title: "A Committee upon the Relation of the University to Secondary Schools, to consist of nine members, of whom three shall be members of the Board of Overseers, three members of the Committee of the Faculty on Admissions of the University, and three shall be elected from among the heads or instructors of Secondary Schools."

After consultation with the heads of Departments and those in charge of the Courses of Instruction, the Committee would further recommend the following changes: —

1. That the title of the Committee to visit the Lawrence Scientific School be changed so as to read "To visit the Lawrence Scientific School and the Graduate School of Applied Science."

2. That an additional committee be appointed "To visit the Graduate School of Arts and Sciences."

3. That the title of the Committee "To visit the Fogg Museum and Department of Fine Arts" be changed so as to read "To visit the Fogg Museum"; and that of the Committee on the Course in Architecture be changed so as to read "On Fine Arts and Architecture."

4. That, in accordance with the usage in other similar cases, a committee be ordered to visit the Germanic Museum, and the name of the present committee for the Course of Instruction on Germanic Languages and Literature be changed to read simply "On German."

5. It has been represented that the division of the teaching in History into two separate courses, (1) "Ancient History, Mediaeval History and Roman Law"; and (2) "Modern History and International Law," is antiquated, and not consistent with the division of studies now in use. It is accordingly recommended that these designations, and the corresponding committees, be dropped, and two new committees be provided, one to visit the course in "History," the other to visit that "On Government."

6. The Committee also recommends that a committee be provided to visit the newly established Course of Instruction in Forestry.

No further changes are at present suggested.

Forms of votes are herewith submitted incorporating, where necessary, the above recommendations into the Rules and Bylaws of the Board.

The Committee has heretofore in its annual reports repeatedly called attention to the fact that the efficiency of every visiting committee, whether of a Department or Course of Instruction, depends upon the initiative of its chairman. The Rules of the Board prescribe not only that the visiting committees shall report in writing at least once in three years, but that each committee shall hold early in the academic year at least one meeting with all the professors and assistant professors in the Department or Course of Instruction such committee is appointed to visit, in order to receive suggestions, inquire into defects and needs, hear complaints, and give encouragement and counsel. The apparatus, libraries, and scientific collections belonging to the several departments of the University shall, it is also prescribed, be examined and reported on by the committees appointed to visit said Departments respectively.

In the list of committees as reported it will be observed that the first name on each committee has been selected because of seniority, because the individual bearing it is a member of the Board, or because, not being a member of the Board, there was reason to believe he was specially interested in the Department or Course of Instruction. But the Committee would again repeat that such designation of a member of a committee is not final, and that the organization of each visiting committee is in its own hands. The member first named ordinarily acts as chairman. He should certainly call the committee together at an early day after its appointment. But, in case he feels that, from absence and more pressing demands upon his time and thought, he cannot efficiently perform the duties of chairman, it is for him so to advise his associates, and it is then within the province of the committee to select as chairman another of its members. The end and aim to be kept in view is the efficiency of the committee and its active participation in the work of the Department or Course of Instruction.

These committees have been carefully selected as the result of much discussion and correspondence, and so arranged as to give this Board the means through which to exercise an intelligent oversight of each Department and every Course of Instruction of the entire University, with a view to supplying a channel of sympathetic com-

munication between it and that element in the community interested in its efficiency and development. So it would unquestionably contribute to the more complete accomplishment of this most desirable result should the several heads of the Departments or Courses of Instruction, if no action is taken by the Committee early in each year, invite the Committee, through its chairman, to visit the Department or Course, and inform those composing the Committee of its efficiency and requirements. Visiting committees are, it is well known, necessarily made up in largest part of men more or less occupied with professional or business affairs. With the best intentions, therefore, action on the part of the committee is not infrequently delayed, awaiting some more opportune occasion or a time of greater leisure. The entire year then not unseldom is allowed to elapse without any movement made. Under these circumstances, a reminder and invitation from the head of the Department or Course of Instruction will probably lead to action which otherwise might be indefinitely postponed. If the heads of the Department or Course of Instruction would thus evince an interest in the committee, as well as wait in the expectation that the members of the committee will assume the initiative and evince an interest in the Department or Course, much now left undone might not improbably be accomplished.

In accordance with the vote of the Board of November 28, 1900, the usual printed schedule of those recommended to compose the Visiting Committees for the several Departments and Courses of Instruction of the University during the current academic year is herewith submitted for approval.

By order of the Committee,

CHARLES F. ADAMS,
Chairman.

Boston, November 21, 1906.

COMMITTEES APPOINTED BY THE BOARD OF OVERSEERS.

1907.

ON ELECTIONS.

Moorfield Storey,
James J. Storrow,
Stephen M. Weld,
William Caleb Loring,
Edmund Wetmore.

ON REPORTS AND RESOLUTIONS.

Charles F. Adams,
Edwin P. Seaver,
Winslow Warren,
Charles E. Norton,
Francis L. Higginson,
Moses Williams,
Louis A. Frothingham.

ON DEPARTMENTS.

To visit the Divinity School.

Paul R. Frothingham,
James DeNormandie,
Daniel Merriman,
Horace S. Sears,
Arthur S. Johnson,
Francis H. Rowley,
John A. Bellows,
Augustus M. Lord.

To visit the Law School.

William C. Loring,
James T. Mitchell,
Edmund Wetmore,
Louis D. Brandeis,
Joseph B. Warner,
George Putnam.

To visit the Medical and Dental Schools.

David W. Cheever,
George B. Shattuck,
Charles F. Folsom,
Alexander Cochrane,
Edmund D. Codman,
William Sturgis Bigelow,
Henry H. Sprague,
Luther D. Shepard,
Henry Saltonstall Howe,
George F. Fabyan,
Henry P. Bowditch.

To visit the Bussey Institution.

Carroll Dunham,
Moorfield Storey,
J. Arthur Beebe,
Walter C. Baylies,
John Lowell,
Augustin H. Parker,
William H. Ruddick,
William S. Appleton,
Isaac S. Whiting.

To visit the Library.

Francis R. Appleton,
Samuel A. Green,
Charles C. Smith,
Francis Shaw,
Gardiner M. Lane,
William R. Thayer,
George Lee Peabody,
Clement W. Andrews,
James Loeb.

To visit the Observatory.

Edwin P. Seaver,
Henry S. Huidekoper,
Charles S. Fairchild,
Simon Newcomb,
Robert Treat Paine,
Charles P. Bowditch,
George I. Alden,
Anna P. Draper (Mrs. Henry Draper),
George R. Agassiz,
Elihu Thomson.

To visit the Botanic Garden and Botanical Museum.

Frederic A. Delano,
David Pingree,
Nathaniel C. Nash,
Oliver Ames,
Elliot C. Lee,
Mary Lee Ware (Miss),
Edwin F. Atkins,
Arthur F. Estabrook,
Walter Hunnewell,
William Powell Wilson,
Thomas Emerson Proctor.

To visit the Gray Herbarium.

Moses Williams,
George G. Kennedy,
Nathaniel T. Kidder,
Emile F. Williams,
Walter Deane,
George W. Hammond,
George R. White,
John E. Thayer,
Joseph R. Leeson.

To visit the University Museum.

David W. Cheever,
Augustus Hemenway,
Charles F. Folsom,
George P. Gardner,
Rodolphe L. Agassiz,
Francis Noyes Balch,
Henry S. Hunnewell.

To visit the Museum of Comparative Zoölogy.

David W. Cheever,
Charles F. Folsom,
Louis Cabot,
Dudley L. Pickman,
William Brewster,
John E. Thayer.

To visit the Peabody Museum.

Augustus Hemenway,
Charles P. Bowditch,
Henry W. Haynes,
Jesse W. Fewkes,
Clarence J. Blake,
Clarence B. Moore,
Elliot C. Lee.

To visit the Germanic Museum.

Henry W. Putnam,
Amory A. Lawrence,
Louis Prang,
Clement S. Houghton,
Heinrich Conried,
George A. Bartlett,
Otto H. Kahn.

To visit the Arnold Arboretum.

Stephen M. Weld,
Augustus Hemenway,
Walter Hunnewell,
Charles E. Stratton,
Mary S. Ames (Miss),
Abby A. Bradley (Miss),
Nathan Matthews, Jr.,
John E. Thayer,
Frank G. Webster,
Frederick S. Moseley.

To visit the Semitic Museum and Division of Semitic Languages and History.

Jacob H. Schiff,
William C. Loring,
Isidor Straus,
George Wigglesworth,
William C. Endicott,
John Wells Morss,
Henry W. Peabody,
David A. Ellis,
Herbert E. Davidson.

To visit the Fogg Museum.

Charles E. Norton,
J. Randolph Coolidge,
Francis Bartlett,
Frank D. Millet,
Francis Bullard,
James Loeb,
Edward W. Emerson.

To visit the Lawrence Scientific School and the Graduate School of Applied Science.

Frederick P. Fish,
Henry S. Huidekoper,
Erasmus D. Leavitt,
John Lawrence,
A. Lawrence Rotch,
Charles H. Manning,
James J. Myers,
Philip Stockton,
Hammond V. Hayes.

To visit the Graduate School of Arts and Sciences.

William W. Goodwin,
Stratton D. Brooks,
Gardiner M. Lane,
Edward Forbes,
A. Lawrence Rotch,
Charles P. Bowditch,
Owen Wister,
Edward Robinson.

To visit the Jefferson Physical Laboratory and Department of Physics.

A. Lawrence Rotch,
Frederick P. Fish,
T. Jefferson Coolidge,
Elihu Thomson,
Erasmus D. Leavitt,
Elliot C. Lee,
Samuel Hill,
Hammond V. Hayes.

To visit the Chemical Laboratory.

David W. Cheever,
Edward D. Pearce,
Charles F. Folsom,
Wolcott Gibbs,
Samuel Cabot,
Edward Mallinckrodt,
Clifford Richardson,
James M. Crafts,
Joseph Wharton.

To visit the Stillman Infirmary.

Clarence J. Blake,
David W. Cheever,
Augustus Hemenway,
George B. Shattuck,
Charles F. Folsom,
James A. Stillman,
Philip B. Howard,
John T. G. Nichols.

ON PHYSICAL TRAINING, ATHLETIC SPORTS, AND SANITARY CONDITION OF ALL BUILDINGS.

Francis L. Higginson,
Moses Williams,
Louis A. Frothingham,
Edward D. Brandegee,
Robert F. Clark,
Edwin Farnham,
Maurice H. Richardson,
William Hooper,
Clarence J. Blake,
Samuel H. Durgin.

ON THE ADMINISTRATION OF THE UNIVERSITY CHAPEL.

George Wigglesworth,
George A. Gordon,
William Lawrence,
Paul R. Frothingham,
Samuel M. Crothers,
Roland W. Boyden,
William DeWitt Hyde.

ON THE RELATION OF THE UNIVERSITY TO SECONDARY SCHOOLS.

Edwin P. Seaver,
Amory A. Lawrence,
James J. Storrow,
John Goddard Hart,
Wallace Clement Sabine,
Edgar H. Wells,
Edward J. Goodwin,
Alfred Ernest Stearns,
William Clinton Bates.

ON THE TREASURER'S ACCOUNTS.

Moses Williams,
Stephen M. Weld,
Samuel Hill,
William C. Endicott,
Gordon Abbott,
Grafton St.L. Abbott,
Allan Forbes,
Arthur Lyman,
Richard C. Storey,
John L. Saltonstall.

FOR THE COLLEGE.

ON GOVERNMENT.

Moorfield Storey,
William Lawrence,
Robert Grant,
Edwin P. Seaver,
Winslow Warren,
Gardiner M. Lane,
Charles C. Jackson.

FOR THE COURSES OF INSTRUCTION.

ON INDIC PHILOLOGY.

Edward H. Hall. A. V. Williams Jackson, William Sturgis Bigelow.

ON THE CLASSICS.

Gardiner M. Lane, Babson S. Ladd, Henry B. Chapin,
William W. Goodwin, James Loeb, Prentiss Cummings,
W. Amory Gardner, W. R. Richardson.

ON ENGLISH LITERATURE.

Robert Grant, Samuel M. Crothers, Hammond Lamont,
William R. Thayer.

ON COMPOSITION AND RHETORIC.

Charles F. Adams, George R. Nutter, Edward S. Martin,
Hammond Lamont.

ON GERMAN.

Frederick P. Fish, George Francis Arnold, Marshall W. Davis.

ON FRENCH.

J. Templeman Coolidge, Jr., T. Russell Sullivan, Gordon Abbott,
Francis McLennan.

ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY.

George B. Shattuck, J. Randolph Coolidge, James Geddes, Jr.,
William R. Thayer, William B. de las Casas.

ON HISTORY.

James F. Rhodes, John Noble, William F. Wharton,
William R. Thayer.

ON GOVERNMENT.

Frederick P. Fish, James T. Mitchell, Charles S. Hamlin,
Samuel W. McCall.

ON POLITICAL ECONOMY.

Arthur T. Lyman, Charles S. Fairchild, Frederic A. Delano,
John F. Moors. J. Wells Farley.

ON PHILOSOPHY.

George B. Dorr, Richard H. Dana, William R. Warren,
Richard C. Cabot, Reginald C. Robbins, Joseph Lee.

ON EDUCATION.

James J. Storrow, John F. Moors, Grafton D. Cushing,
Edwin P. Seaver, William Taggard Piper, Frederic P. Cabot.

ON FINE ARTS AND ARCHITECTURE.

C. Howard Walker, R. Clipston Sturgis, Edmund C. Tarbell,
Frederick P. Vinton, Daniel H. Burnham, Holker Abbott.

ON MUSIC.

Arthur Foote, Edward B. Hill, Percy L. Atherton,
George A. Burdett.

ON MATHEMATICS.

William Lowell Putnam, Simon Newcomb, Philip Stockton.

ON ENGINEERING.

Joseph R. Worcester, Charles H. Manning, Charles C. Schneider,
James J. Storrow, Frederick P. Fish, Edwin W. Rice, Jr.,
Edmund A. Stanley Clark.

ON BOTANY.

Nathaniel C. Nash, George G. Kennedy, Walter Deane,
Edward L. Rand.

ON ZOÖLOGY.

David W. Cheever, Charles F. Folsom, John E. Thayer,
William Brewster, Walter Faxon, John C. Phillips.

ON GEOLOGY, MINERALOGY, AND PETROGRAPHY.

Rodolphe L. Agassiz, George P. Gardner, Raphael Pumpelly,
William Sturgis Bigelow, William E. C. Eustis, Benjamin K. Emerson,
Herbert E. Gregory.

ON MINING AND METALLURGY.

John Hays Hammond, Quincy A. Shaw, Jr., Hennen Jennings,
Charles P. Perin, Frank H. Taylor, Benjamin B. Thayer,
R. Alexander F. Penrose, Jr., Edgar C. Felton, Albert F. Holden.

ON FORESTRY.

Charles F. Adams, James W. Brooks, James S. Russell,
Henry James, 2d.

December 11, 1906.

CLXXXVI.

REPORT OF THE COMMITTEE ON MUSIC.

To the Board of Overseers of Harvard College: —

The Committee to visit the Department of Music has the honor to make its report to the Board of Overseers. With this is also enclosed the prospectus issued by the Musical Union of Harvard University in connection with a proposed building to be erected at Cambridge.

All of the members of the Visiting Committee have been present at recitations or lectures during the past year.

The sound and encouraging condition of the Department is shown by the steady interest in it shown during the past few years; the attendance upon it having been as follows: 1901–02, 105 students; 1906–07, 210 students.

The appointment of Mr. Heilman as instructor has been a success; he has turned out to be the right man. The Committee is of the opinion that a portion of the work assumed by Professor Spalding could with advantage be taken by Mr. Heilman. Professor Spalding has, we believe, more to attend to than is usually the case with assistant professors, and Mr. Heilman has proved himself capable of taking on additional work.

As a further reason for this, it seems well that, in case of Professor Spalding's absence at any time, his assistant shall have had a larger practical knowledge of the working of the Department.

ARTHUR FOOTE, *Chairman.*
PERCY L. ATHERTON,
EDWARD B. HILL,
H. A. LAMB,
GEORGE A. BURDETT.

December 3, 1906.

CLXXXVII.

REPORT OF THE COMMITTEE TO VISIT THE UNIVERSITY MUSEUM

AND

THE COMMITTEE TO VISIT THE MUSEUM OF COMPARATIVE ZOÖLOGY

AND

THE COMMITTEE ON ZOÖLOGY.

To the Board of Overseers of Harvard College: —

The Committee of Overseers and others visited the University Museum, the Museum of Comparative Zoölogy, and the Department of Zoölogy, on December 4, for two and one-half hours.

They were met by Mr. A. Agassiz, Mr. Henshaw, and the full staff of the Zoölogical Department. Drs. Cheever and Folsom, and Messrs. R. Agassiz, Balch, Pickman, and Brewster were present, Messrs. Gardner, Hunnewell, Cabot, Thayer, Phillips, and Faxon were absent.

By Mr. Agassiz's advice, it is recommended that the Committee to visit the University Museum be abolished, and its members merged in the Committee to visit the Museum of Comparative Zoölogy. Reduplication of duties and loss of time are the reasons for this consolidation.

There have been no changes in the University Museum, other than the acquiring of new and rare specimens, — the okapi, a new animal from the Congo forests, the Manchurian tiger, and others. The general policy is to keep the exhibition collection untouched, but to get rid of all old and useless specimens and duplicates. By this policy there will be room enough for years to come. Connection by building across to the Peabody Museum is still desired, — estimated cost, $100,000.

In Zoölogy, the elementary instruction is unchanged; the attendance, a good average. We still lack courses on Systematic Zoölogy.

A great want is courses on Ornithology and Entomology. Fully twelve men a year seek in vain for this instruction. The money for publications and for laboratory work has been unfortunately cut down from $400 to $200 a year. Fourteen articles have been printed this year.

Complaint is made that special students are not adequately informed of the opportunities for instruction. It is advised that line 6th from bottom of page 703 of the Harvard University Catalogue, which now reads "receive specialists," be changed to read "receive students specially qualified," and that a notice of these opportunities be posted.

For the Committee,

DAVID W. CHEEVER.

DECEMBER 7, 1906.

CLXXXVIII.

REPORT OF THE COMMITTEE TO VISIT THE CHEMICAL LABORATORY.

To the Board of Overseers of Harvard College: —

Your Committee, consisting of the Overseers and others, visited the Chemical Laboratory on Thursday, December 6, at 11 A.M.

Drs. Cheever and Folsom, and Mr. Clifford Richardson, of New York, were present; Messrs. Wolcott Gibbs, Edward Mallinckrodt, J. M. Crafts, and Joseph Wharton were absent; Mr. Samuel Cabot had died; Mr. E. D. Pearce intended to come, and was prevented by illness. Three out of nine were present.

The Committee was received by Professor Sanger and the entire staff. The visit lasted two hours. Every room was thoroughly inspected.

A new fan was found in one attic, a larger air exhaust in one laboratory. With these exceptions the conditions described and condemned in last year's report remain unchanged. There is no reform — no improvement. Meanwhile, the classes have increased from about 800 to 898. One basement laboratory is five feet under ground and used for 152 students; one is deeper under ground. In a closet, at the latter depth, one original investigator spends all day. The space occupied in Dane Hall is unchanged. The Chemical Faculty does not think it could give them what they want, if the whole were taken. The attics of Boylston are the best and perhaps the only good rooms.

Professor Richards last year taught original research students under a violation of his conscience — this year he teaches none. A new laboratory, or several one-story laboratories, on the College grounds, for research, are needed *first*. $100,000 would construct some. The Committee believes in this, and not in patching, nor in building yet a new edifice. Factory buildings, says Professor Sanger, are being built at $2 a foot.

Letters from Professor Sanger and Mr. Richardson are appended.

For the Committee,

DAVID W. CHEEVER.

January 9, 1907.

Dr. David W. Cheever, *Chairman*,
Committee of Overseers to Visit the Chemical Laboratory,
557 Boylston Street, Boston.

Sir, — Pursuant to your request, I beg to make the following statement of the needs of the Chemical Laboratory: —

The chief needs of the Laboratory are: —

1. Space for research students.
2. Ventilation and lighting in certain rooms.
3. Administration facilities.
4. Lecture room facilities.
5. Space for additional laboratory instruction.

1. There is now very little actual space left for research students, and further applicants will have to be denied altogether. But the space actually available is in many cases unsuitable, and researches requiring isolation or separate rooms can not be undertaken at all.

2. The problem of securing better general ventilation in Boylston and Dane Halls is a difficult and expensive one, and the ventilation is not bad enough to warrant the expense of a complete rearrangement, considering the general unfitness of the buildings for their purpose. In particular rooms, however, notably the basement laboratories in both Halls, the conditions of ventilation and lighting are extremely bad, and should be remedied.

3. The five hundred, odd, laboratory students in Boylston are served from one small store-room at the top of the building, with inadequate means of communication. The students in Dane Hall are served by a branch store-room in that building.

4. One lecture room (Room 9, Boylston) is used for a maximum of nine courses per term, or five courses per day, and is therefore overtaxed. The other is used only for one course, Chemistry 1, since it is the only room large enough to accommodate the students in that course. It is entirely unsuited for its purpose, as students can neither hear nor see well, unless in the first rows.

5. One of the courses in which the number of students is increasing is Chemistry 2, elementary organic chemistry, now required for entrance to the Medical School. This course ought to include laboratory work, but there is no room for it. For the same reason we can not offer other courses which are greatly needed. There are now no general laboratory courses, open to the elementary student, in technical analysis, sanitary chemistry, biological chemistry, or in industrial processes, courses which come under the head of applied science. Students in the School of Applied Science will have to

receive individual instruction in the subjects which especially interest them, in such quarters as we are able to provide for the purpose.

Paragraphs 1 to 4, above, show the needs for the work we are at present undertaking. Paragraph 5 is to be considered in relation to the possible increase in the offerings of the Division. No substantial growth is possible with our present accommodations.

It is impossible to convey a proper idea of the needs of the laboratory through a written or even a verbal statement. One must visit the building and note the daily work in order to appreciate the wretched conditions.

The only real relief would be a new building. As stated to you in my letter of March 10, 1906, however, the immediate needs of research could be met by the construction of an addition to Boylston Hall on the east side. We should, however, make no general gain from such a building. Some additional courses could be provided for in the remaining rooms of Dane Hall, but the position of this building makes it unsuitable for research.

Respectfully,

CHARLES R. SANGER,
Director.

CAMBRIDGE, MASS., December 12, 1906.

DR. DAVID W. CHEEVER, *Chairman*,
COMMITTEE TO VISIT THE CHEMICAL LABORATORY,
557 Boylston Street, Boston, Mass.

DEAR SIR, — In compliance with your request that I should express in writing my views in regard to the present status of the Chemical Department of Harvard College, as the result of our inspection of the laboratory and consultation with the professors and instructors on the 6th of this month, I would say that it appears to me, both from the point of view of the hygienic conditions which exist, and as a place for instruction and research, that the buildings occupied by the Department are of entirely inadequate size and type. They do not supply an environment which can be inspiring, either to the student or the instructor, while the facilities afforded to the investigator are unworthy of a second-rate school.

It is simply astonishing that work of the very high grade which has appeared from the laboratory for a number of years could have been successfully carried to a conclusion under such surroundings, and it is evident that a vast amount of unnecessary time must have

been expended upon it, which might have been saved, had proper facilities been at hand. The patience of the investigators must have been sorely tried, and the question arises as to how long men of international reputation will tolerate the conditions under which they are now obliged to work, when, possibly, by application to the Carnegie Institution, a laboratory devoted to atomic weight determinations might be erected and supported at Washington, on the lines of that built for geophysical investigations, with which some of the able men who are now devoting their attention to this subject at Cambridge would, no doubt, be asked to ally themselves. Under these circumstances, it seems possible that, if nothing is done to better the conditions at the University, one or more of the ablest members of the staff of the Chemical Department may be lost. They can hardly be expected to remain, wasting the best years of their lives in such unfavorable surroundings. The situation is one which seems to me very serious, and it should receive the immediate consideration of the Overseers and the Corporation, if demoralization of the Department is to be avoided. At the present time, there is no inducement, beyond that of the very great ability of the corps of instructors, to induce young men to take up the study of advanced chemistry at Harvard.

Trusting that the Committee, as a whole, will view the matter in the same light that I have done, I am,

Very truly yours,

CLIFFORD RICHARDSON.

Long Island City, N. Y., Dec. 17, 1906.

CLXXXIX.

REPORT OF THE COMMITTEE TO VISIT THE MEDICAL AND DENTAL SCHOOLS.

To the Board of Overseers of Harvard College: —

The Committee of Overseers and others visited the Medical School December 3, at 11 A.M. Eight members were present, Cheever, Shattuck, Folsom, Bowditch, Bigelow, Cochrane, Sprague, and Codman. Three were absent, Fabyan, Howe, and Shepard.

The Dean, the Curator, and Professors Dwight, Councilman, Ernst, Minot, and Cannon received us. We were also given expert guidance by the Chief Engineer. Two hours and a half were consumed in inspecting some of the buildings. Continuous days would be required to go over them all. We may regret that a number of gentlemen fully occupied elsewhere were unable to devote more time to the survey of these vast edifices, but that regret is tempered by the reflection that the present is no time for criticism or suggestion while the Faculty are embarking on so new an undertaking.

It is a magnificent scientific plant, expensive, but worth all it cost provided it can not only secure, retain and satisfy teachers of high grade, but also receive endorsement enough to fairly compensate the laborious instructors who now devote their best energies to its service, and who will be all needed to utilize its halls.

For the Committee, and with the assent of those present when this report was drawn up,

DAVID W. CHEEVER.

December 7, 1906.

The Report of Drs. Folsom and Shepard, sub-committee to visit the Dental School, contains only one suggestion, viz., the need of a new building. It is not recommended that this be printed.

DAVID W. CHEEVER,
Chairman.

January 4, 1907.

CLXL.

REPORT OF THE COMMITTEE ON BOTANY.

To the Board of Overseers of Harvard College: —

The Committee on Instruction in Botany, having visited the Department of Botany and conferred with its members, beg to submit the following report, which, in their opinion, sets forth the needs of this important branch of instruction. They feel that these needs must receive attention at a very early day.

From the best information obtainable, the Botanical Laboratories of Harvard University compare most unfavorably in their equipment with those of other universities in which Botanical Instruction has been more recently organized. While it is not necessary, or even desirable, that Harvard College should endeavor to vie with New York or Chicago in the architectural magnificence of its Laboratory accommodations, it appears essential that something should be done at once for the improvement of our Laboratories, if we are to hold our own in the competition with other universities for the better class of students.

Unlike the Departments of Zoölogy, Geology, Mineralogy, Chemistry, Physics, etc., the Botanical Department is without a modern system of lighting. This is the more unfortunate because of the unusually low studded rooms of some of the larger Botanical Laboratories. In these rooms, on account of the low ceilings and the resulting smaller windows, fully two thirds of the floor space is of little or no use for teaching purposes. This feature, too, results in a dinginess of aspect which has become a matter of comment, since some of the Botanical Laboratories present a marked and unpleasing contrast to the higher studded and electrically lighted rooms of other Scientific Departments. In addition to modern and adequate provision for lighting, there is also urgent need for ventilation in the overcrowded rooms used for elementary instruction on the second and topmost floors. Appropriate provision for the ventilation and lighting of these Laboratories would moreover result in an economy of space, which would render possible accommodation for graduate students in the Phanerogamic Laboratories, at the present time wholly lacking. It is neither to the credit nor the interest of the College that there

should continue to be no working places for graduate students in the Laboratories devoted to the study of the higher plants. It is not surprising that under existing conditions our graduate students should have grown fewer and fewer compared with those of other large universities. Your Committee, as well as members of the Department of Botany, have called attention more than once to these urgent needs, which should be provided for if this Department, which in the past has been one of the most efficient and distinguished Departments of the University, is to escape complete eclipse.

Your Committee, from the estimate of the Inspector of Grounds and Buildings, have learned that the sum of $5000, expended on the rooms occupied by the Department of Botany in the University Museum in renovations, improvements, and additions to outfit, would suffice, as far as material equipment is concerned, for the present. Such an expenditure is not large compared with the great importance of the results which would be achieved by this disbursement in the improvement of the mental and material condition of the Department of Botany. In the opinion of your Committee, in view of pressing needs, it cannot be long delayed if the Botanical Department is to escape falling into a condition of decay unworthy of its past reputation.

Finally, your Committee strongly urge the provision of a Laboratory servant for the Botanical Department, such as has been employed for many years on the Zoölogical side. This action would relieve individual members of the Department of the necessity of either providing for such attendance out of their own stipends, as they ordinarily do at present, or expending valuable time and energy on menial and mechanical offices, from which officers of instruction in other universities are ordinarily relieved.

Respectfully submitted for the Committee,

NATHANIEL C. NASH,
Chairman.

JANUARY 9, 1907.

CLXLI.

REPORT OF THE COMMITTEE TO VISIT THE PEABODY MUSEUM.

To the Board of Overseers of Harvard College: —

Your Committee appointed to visit the Peabody Museum respectfully report that they visited the Museum on December 20th, 1906, and met all the Officers of Instruction in the Division of Anthropology, except Professor Putnam, who was detained at home by illness.

The Committee were much impressed by the devotion of the Officers to their work, and by their desire to make the instruction effective and as free as possible from all tendency to degenerating into merely perfunctory and easy courses. To accomplish this, conferences by sections in the Museum and "quizzing" have been added to the lectures in the large courses. This method of instruction must necessarily take up much more of the time of the Instructor than is taken by lectures, since the work must be given to the sections one after the other instead of being brought before the whole class in a lecture, while the number of examination books is also largely increased. This additional work has fallen on Mr. Spinden, who has received the appointment of Austin Teaching Fellow, but there is more work than one assistant can attend to, and there is urgent need that the salary of another Assistant in Anthropology should be provided for, in addition to continuing for another year the appointment of an Austin Teaching Fellow.

The Officers of Instruction in the Division of Anthropology are as follows: —

Professor Putnam, Chairman,
Dr. Dixon, Assistant Professor,
Dr. Farabee, Instructor (with leave of absence),
Dr. Tozzer, Instructor,
Dr. Peabody, Instructor,
Mr. Spinden, Austin Teaching Fellow.

Professor Putnam's salary comes from the Peabody Professorship Fund. Dr. Farabee's salary, during his leave of absence, is to be

paid for from the De Milhau S. A. Expedition Fund. For the current year, the salaries of Dr. Dixon and Mr. Spinden only are paid by the Corporation.

The Committee are of the opinion that it is not proper or dignified that the College should allow its Officers of Instruction — men who, like those of this Division, are fitted as Instructors by years of experience in study, field-work, and training — to be dependent on their own means or those of others for their salaries.

The Division has over two hundred students taking over two hundred courses. If the cost of the average course is taken at $35, then the two hundred students pay in to the College Treasury some $7,000, while less than $3,000 is returned to the Division for instruction.

The Committee therefore request that for the year 1907–08 the salary of Dr. Tozzer should be paid by the College, that another Assistant in Anthropology should be appointed, that the Austin Teaching Fellowship should be continued, and that Dr. Farabee's appointment as Instructor should be without limit of time.

AUGUSTUS HEMENWAY,
CHARLES P. BOWDITCH,
ELLIOT C. LEE,
HENRY W. HAYNES.

February 27, 1907.

CLXLII

REPORT OF THE COMMITTEE APPOINTED TO VISIT THE GRAY HERBARIUM

To the Board of Overseers of Harvard College: —

Since its last report the Committee appointed to visit the Gray Herbarium has held at least two meetings annually. Each year the first of these meetings has been held at the Herbarium building and the members of the Committee have heard from the Curator a detailed report on the condition and needs of the Herbarium, the work of the staff, and the financial status of the establishment. They have inspected changes in the arrangement of the collections and library, and have given such aid as they could by suggestions and counsel. Each year they have approved a brief circular to be sent out in the name of the Committee to solicit aid for the Herbarium.

These circulars have been the means of bringing to the Herbarium from a considerable number of donors small gifts aggregating toward $2,000 annually.

The Committee approves the general policy of the Herbarium management, and believes the development of the collections and scientific output in the way of publication to be gratifying both in extent and quality.

At its second meeting, usually held in May or June, the Committee has made special efforts to provide means for covering any deficit which the Herbarium would otherwise have suffered, and to this end nearly every member has made personal contributions.

The Committee would draw attention to the surprising success of the Librarian of the Gray Herbarium in carrying on an extensive and technical card index of new species, varieties, and forms of American plants, — a publication which is purchased by various large herbaria both in America and abroad. This bibliographical index is now bringing to the Gray Herbarium a net annual income of about $1,200 — more, in fact, than the amount now received from the copyrights on all the botanical text-books of the Gray series. It is believed also that this work reacts favorably in other respects upon the scientific development of the Herbarium and its Library by stimulating the staff to exceptional efforts to acquire promptly for the establishment all publications on American plants.

The Committee has also been impressed (1) with the unusual value and interest attaching to Professor Fernald's botanical exploration of the Gaspé Peninsula, (2) with Mr. Pringle's long and highly important series of botanical discoveries in Mexico, and (3) with the success of the Curator in bringing the Gray Herbarium into cordial relations with the great botanical establishments at Kew, London, Paris, Berlin, and Vienna, so that all these leading herbaria are now on a common footing as to the difficult and intricate matter of botanical nomenclature.

The serious need of the Gray Herbarium is a fireproof building of adequate size and proper arrangement to provide safe storage for the collections and convenient working rooms for the staff. The present structure, built more than forty years ago, is now outgrown, and from its nature does not offer possibilities for successful addition or alteration. In its housing the Gray Herbarium is now far behind the similar collections at the New York Botanical Garden, the National Museum, the Missouri Botanical Garden, and the Field Museum at Chicago, not to mention foreign establishments.

The Gray Herbarium is one of the oldest as well as one of the most important collections possessed by the University, and it is visited by many distinguished specialists who come to consult its specimens. It is a matter of chagrin that such visiting scientists can no longer be offered adequate space or table room to work in comfort, and the Gray Herbarium in its present overcrowded quarters must often suffer by comparison with other establishments of its kind.

The Committee cannot bring this report to a close without expressing a keen sense of loss through the death of Francis Howard Peabody, for many years chairman of the Committee.

MOSES WILLIAMS,
Chairman.

March 4, 1907.

CLXLIII

REPORT OF THE COMMITTEE ON GERMAN

To the Board of Overseers of Harvard College: —

The Committee on German, after conference with the instructing force of the German Department of Harvard University, reports as follows: —

The conditions of the more advanced work of the Department are satisfactory. Courses are offered which are adequate and so varied from year to year as substantially to afford all the opportunities for the advanced study of German and German literature that are required. The recent appointment of a Professor of the "History of German Culture" seems to involve the giving of a course on the subject referred to in his title. Arrangements should be made for such a course.

The situation is not as satisfactory in the elementary work of the Department. Elementary German is required of all Freshmen who have not presented German for admission. Many of those who are forced to take it regard it as a burden, and are therefore lacking in enthusiasm. If it were not almost an impropriety that a graduate of Harvard College should have no knowledge whatever of German, it might well be contended that the study should not be made compulsory. It is probably impracticable to require Freshmen to present both French and German for admission.

If the elementary courses are continued as required studies, they should be presented effectively and made as attractive as possible. Your Committee agrees with the conclusion of the instructing force that such is not now the case. The chief difficulty arises from the fact that there is not sufficient stability in the corps of instructors in charge of these courses. Many of them are young men, often graduate students, who are appointed to serve for short terms. In eleven years, there have been thirty-two different instructors in German A. Of these, sixteen served for only one year. At times, half of the instructors in the course were new to the work. At other times, there were ten men teaching twelve sections. Such conditions are inconsistent with systematic instruction or with a definite continuity of policy.

While it is probably necessary that some of this elementary work should be committed to young men appointed for short terms, it is

obviously desirable that, as far as possible, the instructors should be permanently associated with the Department, with opportunities for advancement which will attract and hold them to the work. Very little can be expected from the required courses in elementary German, if the instructors are for the most part graduate students, who give but a small portion of their time to teaching and who look forward only to a brief connection with the courses of instruction in which they are engaged.

The members of the German Department are to some extent discouraged with the results of the instruction in the elementary courses. They do not think that adequate progress is made by the greater part of the men. This is undoubtedly due to the unfavorable conditions under which the work is carried on.

The class rooms of the various sections of German are scattered among several buildings, far apart from each other and often inconvenient of access. This makes adequate supervision and coöperation well nigh impossible. There are no class rooms especially devoted to the German classes. There can be no doubt that the interest of the students would be greatly stimulated if certain special rooms were provided, particularly for the elementary courses, in which there could be collected maps, pictures, busts, and other material illustrative of German history, literature and art, such as are now to be found in the German class rooms of many colleges.

The instructing force eagerly looks forward to the erection of an appropriate building for the Germanic Museum, not merely because the Museum will then be a more effective influence on the students, but also because there will undoubtedly be provided in it increased facilities for the class work of the Department.

The Department urgently requires somewhat larger funds for the purchase of books to complete the collection in Gore Hall and the special library in Warren House.

Respectfully submitted,

FREDERICK P. FISH,
GEORGE F. ARNOLD,
MARSHALL W. DAVIS.

April 10, 1907.

CLXLIV

REPORT OF THE COMMITTEE TO VISIT THE GERMANIC MUSEUM

To the Board of Overseers of Harvard College: —

For several years the Committee to visit the Germanic Museum has had no particular occasion to make a report to the Board of Overseers, since the annual reports of the Curator, Prof. Francke, to the President of the University, printed with the President's Report, set forth fully the progress and the needs of the Museum. There has, therefore, been nothing important for the Committee to state or to recommend that was not already before the Governing Boards.

The Museum has, however, now practically reached the point where it must either stand still as a completed growth or take a very long and important step forward. The old gymnasium, or Rogers building, where the Museum is now located, is not striking in its external architecture, but is admirably adapted internally to the housing of a moderately large collection of works of art, although rather small for the proper display of some of the larger pieces of statuary and architecture. The lighting is excellent and the background afforded by the architecture both tasteful and effective. Taken as a unit, with its present limitations, both the collection and its setting may be characterized as a gem, and is evidently so regarded by the very large number of visitors, — amounting now to over 100,000, and mostly strangers to the College and to Cambridge, — who annually come to see it on the few days in each week when it is open.

To the College itself the Museum is indebted for the building and for most of the expense of adapting it to its present use. The collections themselves, and the expense of setting them up, which has been very large, are the gifts of public and private benefactors. The largest and much the most important gift is, of course, that of the German Emperor, which has been seconded by gifts from the King of Saxony and the Swiss Confederation. The rest of the collection represents a cost of about $10,000, including freight charges upon imported works of sculpture and architecture, and the

cost of setting up all the monuments including those from the foreign sovereigns and governments above mentioned. This sum has been raised largely through the instrumentality of the Germanic Museum Association, the personnel of whose board of directors has from the beginning been to a considerable extent identical with that of your Committee, so that the two have worked in harmony substantially as one body. In a general way this sum has come from the following sources : —

First. — About $2,500 from dramatic performances at Sanders Theatre and at some Boston theatre by Mr. Heinrich Conried's Irving Place Theatre Company of New York.

Second. — About $3,000 from life and annual membership dues of the Germanic Museum Association.

Third. — About $4,000 from private gifts for the purchase and setting up of objects in the collection. Of this last-named sum about $1,200 is from numerous German Societies in different parts of the country, — including among others $390 from the United German Singing Societies, $250 from the North American Gymnastic Union, $133 from the Boston Turn Verein, and $100 each from the Orpheus Musical Society of Boston, the Grand Lodge of German Order of Harugari of Massachusetts, and the Deutscher Verein of Harvard College, — and represents a considerable and widespread interest in the Museum on the part of that portion of our population which is of Germanic origin. Beside the above sum of $10,000, about $1,000 has been contributed by individuals towards the annual running expenses of the Museum. There is no room left in the present building for any except small additions, and few of them, without serious overcrowding. We have, therefore, practically reached our limit in that direction for the present.

The next step which seems to your Committee to be of pressing and immediate importance is that the Museum should be open the whole of each week-day and Sunday afternoons throughout the year as the other College museums are. Hitherto it has been open only two entire days and two other afternoons, in each week, and the annual expense of this has been about $850, which has been met mostly by private subscription but partly by the College. The estimated annual expense of keeping it open the whole week is about $1,700. Of this the income of the recently established Emperor William Fund, now amounting to $26,285, will supply about $1,200; the remainder the Committee proposes if possible to raise by subscriptions as a temporary expedient until enough can be

added to the Emperor William Fund to yield the additional annual income needed. We hope that the added interest in, and acquaintance with, the collections thus created in a wider public may be the first influence leading towards the next great step which the Museum ought to take. That step is the raising of a fund to erect, fill, equip and maintain a larger and finer building on a new site, with much larger and more representative collections in it. As yet we have no immediate prospect of accomplishing this end, but are not without hope that it may be realized in the not very remote future.

For the Committee,

HENRY W. PUTNAM,
Chairman.

May 8, 1907.

CLXLV

REPORT OF THE COMMITTEE TO VISIT THE LIBRARY

To the Board of Overseers of Harvard College: —

Your Committee appointed to visit the Library respectfully reports: —

A meeting was held at the Library in March, attended by six members of the Committee, with the Librarian present.

We are glad to state that the recommendations made by this Committee a year ago, and then approved by the Board, that an addition to the main Library building should be built for the necessary immediate accommodation of the Library force and students, have been adopted by the Corporation. Such an addition as recommended is now being built and will be ready to occupy in early summer. In the opinion of your Committee the cost of this new building will be more than justified, and the purposes of it, which have been set forth and anticipated, will be carried out in useful and effective ways.

To this extent, therefore, we report progress.

The Library has still great needs and small needs.

The great need is more room and greater ability to do its important business in the manner in which it should be done. This need, which means building and endowment, will be satisfied at some time, we have no doubt.

At this time, the Librarian informs your Committee, the acute need is a small additional sum for expenses of administration. This condition, he remarks, "constitutes an increasing source of difficulty and anxiety." The Library, to quote Mr. Lane, the Librarian, "absolutely needs at the lowest estimate an additional $5,000 a year, and that this ought to be assured for at least five years." We find that while the number of books increases very rapidly, and the money available for the purchase of books from funds and gifts is also increasing, the cost of administration has increased in seven years comparatively little, being, perhaps, as one to five to the increase of books and labor. During last year the amount spent for books was $28,500, of which $9,500 was from gifts. The cost of administration was last year $49,250; the budget for 1906–07 is still less — $48,300.

It seems evident that a few thousand dollars more should be found for Library uses. To judge by the evidence before your Committee, the lack of it is poor economy.

We disapprove of begging for this by anyone, least of all by an officer of the College. The proper cost of running a great department of the College, of which cost we do not pretend to be judges, should in our opinion be provided by the College treasury. If necessary, there should be a smaller amount spent for books and more for the care of those we have. Certain funds, we are advised, may be used at will for the purchase of books or for general expenses of the Library. Under such conditions, we recommend that a re-apportionment of such funds be made in some degree, so that the reported embarrassment may be relieved.

Accepting the present situation of the Library as it is presented to us, we deem it unworthy and bad judgment for the College to permit the Library work, for lack of a few thousand dollars, to fall short within the scope planned and expected of it.

Respectfully submitted,

FRANCIS R. APPLETON,
Chairman.

May 8, 1907.

CLXLVI.

REPORT OF THE COMMITTEE ON GEOLOGY, MINERALOGY, AND PETROGRAPHY

To the Board of Overseers of Harvard College: —

The Committee met the officers of the Department, in Cambridge, on January 19, 1907.

Since the last report Nernst lights have been installed in the four rooms on the ground floor of the Mineralogical Department of the Museum. Several rare minerals have been acquired, and new instruments added. The working equipment is now in excellent condition. Through the generosity of an officer of the Department and a grant from the Corporation, an assistant has been secured to arrange specimens and pamphlets in the laboratory. This work was previously done by the instructors themselves, and took a great deal of their time.

The Meteorological Observatory has now been completed and will need only a few additional instruments from time to time.

The teaching collections in Paleontology are in excellent condition.

The courses in Geology have been somewhat reduced, as the vacancies caused by the death of Professor Shaler and the resignation of Professor Jaggar have not been filled.

Professor Jaggar has brought together a carefully arranged collection illustrating the whole Boston Basin; and Mr. Mansfield is carrying on his work in a very efficient way.

Funds have been given by friends of the Department for the purchase of a much needed Seismograph.

As mentioned in the report of 1904, a well-trained geologist, skilled in photography, is still much needed to take charge of the Gardner Collection of geological and geographical photographs, as no present member of the Department can give the time required for this work.

The efficiency of the Department seems to the Committee very high, and the continued activity in all branches is shown by the publications, a list of which will be found in the President's Report.

For the Committee,

R. L. AGASSIZ,
Chairman.

May 8, 1907.

CLXLVII.

REPORT OF THE COMMITTEE ON GOVERNMENT.

To the Board of Overseers of Harvard College: —

The undersigned, members of the Committee on the courses of instruction in Government, after conference with the instructing force of the Department, respectfully report as follows: —

In the opinion of your Committee, the field of the Department of Government is of such importance that it should be covered as completely as conditions permit. The work of the Department relates to problems which have vitally concerned mankind from the beginning and which are to-day constantly pressing upon us. The greatest thinkers have labored earnestly upon those problems. There has as yet been no adequate solution of them. In the future, as in the past, "Government," in the broad sense of the word, is likely to be largely experimental in character. For such solution of the problems as is possible, there is required much careful thought based upon accurate knowledge. It is desirable that every educated man should be trained in such knowledge and educated to such thought.

No subject could be more interesting and stimulating to the student. Men are necessarily attracted by the efforts which have been made to establish social and political relations which would adequately protect the community and individual and insure opportunity for personal, industrial and social development under favorable conditions and on sound lines. No citizen can lack interest in the present forms of organization under which the men of his generation live and work.

The study of existing types of government and of the forms which have prevailed at different periods of history, as well as of the views that have been developed and expressed by great thinkers, must afford admirable intellectual training. The knowledge acquired by such study must be of great practical value in determining the soundness of existing ideas and in shaping future development. An accurate acquaintance with the present theories and the way in which they are worked out in the various countries of the world, is to a like degree of absorbing interest and great practical value.

It would seem that from the study of "Government," almost to a greater extent than from any other study, may result the two

things of prime importance that are to be gained from a sound education. First, the accumulation of useful knowledge which is of practical value to the student and makes him helpful to the community of which he is a part; and, second, the general training which develops powers of thought and incidentally of action so as to improve the man and fit him generally for his work in life.

Under the organization at Harvard, the Department of Government is not definitely separated from that of History. The History of Governments, and of the practical working of political organizations in the past, is taught in the courses in History. There remain for the courses in "Government," broadly speaking, three fields of work. First, the organization of the modern State, including constitutional and administrative law and the actual working of government, national, municipal and colonial. This field, which is of course highly important, is well developed at Harvard, although, particularly for graduate work, there should be additional advanced courses as, for example, on Government on the Continent of Europe.

The second field relates to the relations of States to one another; in other words, to International Law and Diplomacy. Much more attention should be given at Harvard to these subjects than is now the case. At the present moment, the Bemis professorship is vacant. The instruction this year consists of one half-course in International Law by a professor from Brown University, borrowed for the year, and a half-course in Diplomacy by an instructor who has accepted a permanent position elsewhere. Even when the Bemis professorship is again filled, the situation will not be taken care of. The holder of that professorship will work partly in the Law School and partly in other departments of the University. It will be extremely difficult to adjust his duties so as to comply with the diverse requirements of a professional school and of the work controlled by the Faculty of Arts and Sciences. There should be available for the work under control of the Faculty of Arts and Sciences the entire time of one competent instructor in International Law and Diplomacy.

A third field which seems to your Committee of great importance and to which very little attention is paid at the present time is that of the History of Political Science, of the theories that have been advanced and the methods that have been tried in the past. All the instruction given in this field at the present time is one half-course on the History of Political Theories and another on Mediaeval Municipal Government. It seems clear that there should be courses

covering the thought upon this subject, from Aristotle, through the Middle Ages and the Renaissance, to Hobbes, Locke, Rousseau and the thinkers of the present day. Such instruction is recognized as a necessary part of the philosophical study of "Government" in a substantial number of the leading universities throughout the civilized world. There can be no doubt that Harvard is behind other universities of its class in this matter.

Courses in Roman and European Law and the History of Comparative Jurisprudence are quite germane to this field of work and, in the opinion of your Committee, should be given. Such were given by Professors Gurney, Henry Adams and Young twenty or thirty years ago, and again in 1895 and 1897 by Mr. Williams, and to some extent in 1900 and 1901 by Dr. Lapsley. Nothing of the sort is now offered except an elementary course in Roman Law, given in alternate years and omitted entirely this year and next. At least one and probably two instructors should be added to the Department in this field of its work

Your Committee believes that additional work of the character suggested is not only important as affording admirable general training and giving knowledge that is of great practical importance, but that it would surely interest a substantial number of men and might well develop, to an almost greater degree than any other courses which could be offered by the University, the earnestness of effort which is well known to characterize students in the professional schools and which should certainly be cultivated in the College.

Important as all this work would be for undergraduates, it seems to your Committee that its omission marks a weakness in the Graduate School of Arts and Sciences which should be corrected.

It is proper to call attention to the fact that in the last fifteen years there has been an actual diminution in the number of instructors in "Government," and practically no increase in the total amount paid to such instructors. Meantime, the value of the courses and the interest in them is shown by an increase of between 200 and 300 per cent. in the number of students taking such courses. In "Government," Harvard is less well equipped than Columbia, Chicago and other universities of the first class. The University does not even offer enough work to keep a graduate student occupied. It is not therefore in a position to attract men who desire to study Government or Political Science as distinguished from History. That such a condition ought not to continue, seems clear.

The Department of Government is made up of strong men who attract and interest students to a marked degree. It seems to your Committee that the addition of a sufficient number of instructors to give adequate courses in International Law and Diplomacy, in the History of Political Science, and in Roman Law and Historical and Comparative Jurisprudence, is necessary, and that even at some sacrifice in other directions, such instructors should be secured and the courses in "Government" increased at least to the extent above indicated.

It is to be regretted that it has been found to be impossible to confer with Judge Mitchell and Mr. McCall, the other members of the Committee.

FREDERICK P. FISH,
CHARLES S. HAMLIN.

MAY 8, 1907.

CLXLVIII.

REPORT OF THE COMMITTEE TO VISIT THE LAWRENCE SCIENTIFIC SCHOOL AND THE GRADUATE SCHOOL OF APPLIED SCIENCE.

To the Board of Overseers of Harvard College: —

The Committee to visit the Lawrence Scientific School and the Graduate School of Applied Science, after a conference with members of the department in charge of the Lawrence Scientific School and the Graduate School of Applied Science, at which all members of the Committee were present except Mr. Lawrence, who is abroad, and Mr. Myers, who was absent from the State, respectfully reports as follows:

A reorganization of the departments of the University dealing with applied science went into effect at the beginning of the academic year 1906–07. Prior to that year, professional education in applied science was given in the Lawrence Scientific School, which afforded opportunity for adequate instruction leading to the degree of S. B. in special departments. The courses in the School were to a large extent required, but were adapted to such specialization as was requisite for sound education in each and all the various branches of the engineering art. Students entered and graduated from the Lawrence Scientific School at substantially the same age as in the case of the academic department of the University, and the requirements for admission to the School, while not the same as for admission to the College, were substantially equivalent in amount.

Graduates from the School were well trained engineers. The reputation of the School, as compared with institutions covering the same ground, was distinctly creditable to the University.

By proper action on the part of the Corporation and Overseers, pursuant to recommendations of the Faculty of Arts and Sciences, a Graduate School of Applied Science has now been established, which is to occupy a relation to the University like that of the Law School and of the Medical School. This Graduate School will confer degrees of Master in Civil Engineering, Master in Mechanical Engineering, Master in Electrical Engineering, Master in Architecture, Master in Landscape Architecture, Master in Forestry, Master of Science in Physics, Master of Science in Chemistry,

Master of Science in Zoölogy, and Master of Science in Geology; each degree to be preceded by a course of study in the Graduate School which should be completed, as at present organized, in two years. The usual opportunity is given to very advanced students to complete the work in less than the two years normally prescribed. Students who, though holders of the bachelor's degree, are not fully prepared for the Graduate School, may complete their preparation by courses in the College while registered in the Graduate School. Such students would take more than two years in the attainment of the Master's degree.

The College offers courses adequate for preparation for the work of the Graduate School. It is the expectation that students in the College will, if they are aiming at a career in applied science, take such courses as will prepare them for the work of the Graduate School as part of the regular course leading to the A. B. degree. It is, however, provided that students who enter the College with the qualifications required for admission to the Lawrence Scientific School may work for a degree of S. B. in the College. This is a new degree and should indicate a training substantially parallel to that given in the Lawrence Scientific School. It may be that the S. B. degree in the College is only a temporary expedient to bridge over the period of transition. In any event, the Graduate School is especially intended for men who are liberally educated rather than for those whose preparatory work has been for the most part on special lines.

Pursuant to the general plan, 153 students formerly in the Lawrence Scientific School have been transferred to Harvard College. There remain in the Lawrence Scientific School 204 students. Special reasons exist which make it inadvisable to force a transfer of these 204 students to the College.

The Lawrence Scientific School has at present 45 first year students, while in the College there are 45 men in the first year who are candidates for the S. B. degree.

Logically, the plan now in force involves the ultimate discontinuance of the Lawrence Scientific School and the training by the College of men for the Graduate School of Applied Science, exactly as it now gives the requisite education to fit its graduates for the other graduate schools of the University. It has not seemed wise to abandon the Lawrence Scientific School immediately. In the opinion of your Committee, that School should continue for the present, and your Committee understands that such is the view of the Department.

Your Committee is of the opinion that the plan upon which the Graduate School has been organized is consistent with the best interests of the University and likely to promote the cause of education in applied science. It must afford the opportunity for a more complete training for the professions requiring technical scientific knowledge than is now given anywhere in the United States. It involves a sound preliminary education in Harvard College or elsewhere, not so specialized as to interfere with that general training which is every year more clearly recognized as essential to a high grade of professional work. Such preliminary training will naturally involve more work in the physical sciences than that elected by the men who are not to adopt applied science as their life's work. In the Graduate School, the studies of course will be special, as in any professional school.

Men who complete the course in applied science given by the University will be somewhat older than those now graduating from the Lawrence Scientific School and more nearly of the age of the graduates from the other professional schools. They will have a better general education and will undoubtedly be better trained professionally than have been the graduates of the Lawrence Scientific School whose entire University course was completed in four years.

This is the first time that a Graduate School of Applied Science has been established in this country in which a preliminary college degree is required as a prerequisite to admission. There must be a field for such a school.

The objections which may be made to the plan of reorganization above outlined are obvious, and are such as are sure to exist whenever a step in advance is taken in education.

It is undoubtedly true at the present time that there are a large number of young men intending to become engineers whose circumstances are such that it seems to them necessary that they should be through with their education and at work at the age at which men have graduated from the Lawrence Scientific School, rather than somewhat later. The remarkable industrial development which has characterized the last twenty-five years has created a field for such young men so large as to ensure immediate and satisfactory employment to them after four years of undergraduate training. It may be questioned if the degree given in the College, whether A. B. or S. B., will be as helpful to such men as the equivalent degree received from the Lawrence Scientific School. It seems a natural feature of the new programme that in the College there should not be

the same amount of strictly professional work as that which has been given in the Scientific School. It is probable that young men who think that they can not devote more than four years to study leading to the professions involving the application of applied science, will to some extent select other institutions than Harvard College in which to get their training.

It must not be forgotten, however, that the demand for educated men in the engineering professions is increasing, and that there is certainly a field for men of a broader training and a more advanced education than that heretofore deemed necessary. There is every reason to believe that quite a sufficient number will appreciate the advantages of a more complete education to make the Graduate School of Applied Science of Harvard University a distinct success.

The conditions are not greatly different from those existing in connection with the training for the other learned professions at the time when the University had the courage to insist upon a college degree as a prerequisite for admission to the Law School and the Medical School. Prior to that time the Schools of Law and of Medicine had, as students, many college graduates and others who had no college degree but were admitted upon examination. In like manner, the Lawrence Scientific School had both classes of students and was, in a sense, a graduate as well as a professional school.

No one can question the wisdom of the University in raising the standard of its other professional schools, by the requirement of a college degree for those desiring to attend those schools.

Your Committee believes that the time has come when the same course may properly be pursued as to the candidates for degrees in the professions dealing with applied science.

Your Committee shares in the feeling of regret that must inevitably attend the closing of the Lawrence Scientific School. This feeling will not be based on sentiment alone, but also upon the recognition of the fact that such a school has in the past, and could in the future, admirably train many men for a useful and satisfactory career.

It may be that the fact that a more definite course of study is required in the Lawrence Scientific School would attract some students whose parents and friends prefer that they should not have the great freedom of election that characterizes the work of the College, and it is certain that there will be a substantial number of young men who will come to the Lawrence Scientific School as long as it is in existence, for the sake of taking a professional course in applied science which will be completed within four years.

Your Committee believes that the department in charge of applied science is efficient, that the courses are adequate, and that the work of the department is well done. In the present period of transition, it does not feel that any suggestions with reference to the organization or work would be timely or proper, and therefore it has not gone into details as it might have felt bound to do if there had not been such a new and complete reorganization, from which conclusive results can not be expected in the first year.

FREDERICK P. FISH,
HAMMOND V. HAYES,
JAMES J. MYERS,
PHILIP STOCKTON,
H. S. HUIDEKOPER,
CHARLES. H. MANNING, U. S. N.,
ERASMUS D. LEAVITT,
A. LAWRENCE ROTCH.

MAY 8, 1907.

CLXLIX.

REPORT OF THE COMMITTEE TO VISIT THE BUSSEY INSTITUTION.

To the Board of Overseers of Harvard College: —

The undersigned, members of the Committee to visit the Bussey Institution, beg to submit the following report: —

This report begins with a short notice of the past history of the Institution; proceeds to consider its present status; examines certain definite plans for its future; and concludes with such suggestions as we have deduced from our study of the problems before us.

With the resignation of Dean Storer, to take effect in September, the first period of the history of the Bussey Institution ends. An Agricultural Chemist of distinction, his has been the directing mind since the Institution was opened in 1871. He shaped its policy, directed the early research work, of which a part of the results have been published in the Bussey Bulletin (19 numbers have appeared), and has discharged the duties of Professor and Dean for a full generation, including many successive years of poverty and disappointment.

The original scope of the Bussey Institution is shown by its stated purpose, by its teaching force, and by the variety and range of the subjects taught. The Catalogue of 1871–72 contains the following statement: —

"It is designed to meet the needs of five classes of students: —

"1. Young men who intend to become practical farmers, gardeners, florists, or landscape gardeners.

"2. Young men who will naturally be called upon to manage large estates — such as the sons of large farmers, and of city men who own country places.

"3. Young men of character, good judgment, or native force, who have neither taste nor aptitude for literary studies, but being fond of country life and observant of natural objects, would make, when thoroughly trained, good stewards or overseers of gentlemen's estates.

"4. Teachers, or young men preparing to be teachers, who expect to be called upon to teach some of the subjects taught in this school.

"5. Persons who wish to familiarize themselves with some specified branch of agriculture, horticulture, or applied zoölogy."

Ten subjects were taught by fourteen men.*

Botany. Professor Asa Gray.
Assistant William G. Farlow.
Horticulture. Professor Francis Parkman.
Applied Zoölogy. Professor Daniel D. Slade.
Instructor in Zoölogy, Nathaniel S. Shaler.
Instructor in Entomology, Francis G. Sanborn.
Chemistry. Professor Francis H. Storer, in Agricultural Chemistry.
Assistant Professor Charles L. Jackson.
Topographical Engineering. Professor Charles F. Hoffman.
Physics. Assistant Professor John Trowbridge.
Farming. Instructor Thomas Motley.
Geography. Instructor William H. Pettee.
French. Instructor Pierre J. Boris.
German. Instructor George T. Dippold.

The School undertook to give thorough instruction in Agriculture, Useful and Ornamental Gardening, and Stock Raising, and was prepared to supply instruction in Physical Geography, Meteorology, the Elements of Geology, Chemistry, and Physics, the Elements of Botany, Zoölogy and Entomology, in Levelling and Road-Building, and in French, and German. There was a three years' course leading to the degree of Bachelor of Agricultural Science. There was a moderate entrance examination, and provision was made for special students without examination who were not candidates for the degree.

As showing the scope of the Bussey at this initial stage attention is called to the description of the courses given by Professor Slade in Applied Zoölogy, and by Assistant Professor Farlow in Botany: —

"Applied Zoölogy, Professor Slade: The anatomy and physiology of domestic animals. Their proper management in health and disease. Epidemics — their nature, progress, mode of introduction, and proper treatment." *

"Botany, Assistant Professor Farlow: Vegetable anatomy, particularly the microscopic study of woods. Rudiments of Cryptogamic Botany. Fungi, especially those injurious to vegetation. Special investigations of the diseases of plants will be pursued. . . . " †

The Bussey was meant to be a School of Agriculture in the broadest sense of that term; it was designed not only to embrace the normal but also to give some attention to the abnormal conditions of animals and plants. That is to say, it was planned to consider animals and plants biologically, in their relations to each other and to man.

One-half of the income from the Bussey Trust was devised to the Bussey Institution. This sum has been irregularly increased by gifts,

* Catalogue of 1871–72. † Catalogue of 1874–75.

by tuition fees, and in recent years by receipts from boarding horses and from the sale of plants and flowers. But the one fixed source of income is the Bussey Trust. The net receipts from this endowment have been as follows: —

1870–71	½ net income Bussey Trust, ...	$16,861.60
1871–72	. . . . .	16,447.53
1872–73	. . . . .	9,167.16
1873–74	. . . . .	17,674.98
1874–75	. . . . .	17,497.12
1875–76	. . . . .	17,155.92
1876–77	. . . . .	8,902.98
1877–78	. . . . .	8,825.52
1878–79	. . . . .	5,113.35
1879–80	. . . . .	3,505.30
1880–81	. . . . .	3,551.52
1881–82	. . . . .	4,685.06
1882–83	. . . . .	5,223.48

The decline in income from $16,447.53 in 1871–72 to $3,505.30 in 1879–80 was due to a diminished earning power of the Trust-Fund investments subsequent to the Boston fire of 1872 and the business depression of 1873. It made a reduction of operating expenses imperative. Research became impracticable, and the inadequate resources of the Institution were applied exclusively to teaching. From this time until the present the teaching has been such as to meet the needs of undergraduates without special preliminary training. Students have been admitted without written examinations: they have been required to satisfy the Dean of their ability to profit by their attendance; and having been enrolled, they have become candidates for the degree. The number of students has been small, at one time so nearly approaching extinction that there was a solitary individual enrolled. In justice to the teaching force it should be said that it would have been impossible to keep the Institution open had not those doing its work been ready to make considerable sacrifices.

Passing to a consideration of the Bussey Institution as it now is, we find that the policy made necessary by loss of income is substantially the present policy. The scope of the School is restricted to undergraduate teaching in seven subjects by eight men: —

Agricultural Chemistry.	Professor Francis H. Storer.
	Instructor F. T. Dillingham.
	Instructor J. H. Robinette.
Horticulture.	Instructor B. M. Watson.
Natural History.	Instructor Elisha W. Morse.

Theory and Practice of Farming. Instructor A. E. Shedd.
Determination of Plants. Instructor D. A. Clarke.
Physics. Instructor A. E. Shedd.
Surveying. Instructor C. H. Paige.

Bussey students, on the Dean's recommendation, may attend courses of study elsewhere within the University without other charges than laboratory fees. The requirements for the degree of B.A.S. are not precisely stated in the Catalogue of 1906–07: — "On the completion of the stated courses given at the Bussey Institution, and after passing with credit the examinations in these subjects which are held at appropriate intervals, candidates for the degree of Bachelor of Agricultural Science will pursue such studies as may be found best to serve the individual aims and purposes of the candidate. The character of these advanced studies may vary very much with different students, for there is a wide range of studies at Cambridge bearing more or less intimately on agriculture, from which the candidate may pick and choose, with the advice and consent of his instructors." This degree is obtainable in three years; though the qualifying remark is made: "A fourth year might well be occupied," and this remark is interpreted by another: "In the case of a student whose earlier education had been less complete, the fourth year might be needed to finish this course." There is nothing to show the number of courses required for this degree or its exact academic value; but we may safely regard it as attainable in three years by men of High School training who have good natural ability. Candidates for it are expected to do their work at the Bussey Institution during two years, and then, while probably continuing to spend a part of their time there, to supplement and round out their work at Bussey by taking courses in related subjects in Cambridge. Such courses would vary with the student's aims; the student of Agriculture inclining toward Geology, Forestry, Irrigation; the Horticulturist toward Botany; and "any person intending to become a *Teacher of Agricultural Science* would naturally study at Cambridge after completing his Bussey course such subjects as Advanced Botany and Zoölogy, Philosophy, Education, and Teaching." Thus the limited resources of the Bussey Institution are supplemented by wider opportunities open to students in Cambridge, while such students still remain members of a special Agricultural School under the direction of the Bussey Faculty.

On July 1, 1906, the Bussey Trust comprised real estate valued at $392,710.18, yielding an income of $17,024.64. This income

is charged with an annuity of $4,000, leaving a net income of $13,024.64, of which one-half is devised to the Bussey Institution, being $6,512.32.

The Bussey Institution does not at present require special preparation for admission. Candidates must be of good character, not less than seventeen years old, and must satisfy the Dean of their ability and purpose to profit by the instruction given. The course provides no general training of university or collegiate quality, but is that of a technical school open to men of average public school acquirements, and giving them a specialized elementary training in Bussey subjects. In student-opinion Bussey undergraduates do not rank with those in other departments of Harvard University; nor, in the nature of things, can they acquire the status of University men without undergoing a similar discipline or making similar attainments. Thus the average Bussey student, if ranked with the body of Harvard undergraduates, is peculiar among them. If he is classed with special students in other departments, he differs from them in two important ways: he is a candidate for a degree, while special students as a rule are not; the instruction given to him must be adapted to his receptive powers, and this determines its grade — whereas the work in other departments is fitted to students who have had a fixed minimum of preparatory discipline in studies fundamental to a liberal education, and its grade is correspondingly advanced.

Compared with other departments of Harvard University, and with some of the State Colleges, where laboratory teaching is highly developed, laboratory facilities at the Bussey are small. Laboratory work is done in Qualitative Analysis, in Surveying, in the greenhouses, and in observing plants in the adjacent Arnold Arboretum. Attention is called in the Catalogue to opportunities for observation and comparison in and near Boston; such as horticultural exhibitions, agricultural warehouses, cattle-markets and abattoirs, greenhouses, fruit and vegetable gardens, farms, and country seats within reach of the energetic student. Such available facilities, if increased by field work at farming or gardening in summer, are referred to as supplementing the required courses at the Bussey and forming a part, though an indefinite and irregular part, of its curriculum. They may, and in a measure they do, offset its lack of farm and garden operations, such as are carried on at most schools of agriculture. The Woodland Hill Estate is devoted primarily to the production of hay, which is consumed there by horses taken to board, this latter practice being intended to keep the hay-fields good.

Before discussing plans for the future of the Bussey Institution we should note the obligations of the Corporation as a Trustee under Benjamin Bussey's will. It has accepted a legacy in Trust of lands and income-bearing investments. It has agreed to establish, and to use the income from those investments to maintain, the Bussey Institution on the Woodland Hill Estate at Forest Hills, and there to give instruction in Agriculture and in related branches of knowledge.* This is a continuing obligation. It appears that the Corporation, so long as it receives funds for that purpose from the Bussey Trust, must use them for the Bussey Institution and must maintain it on the Woodland Hill Estate, unless otherwise authorized by the courts. The Bussey Institution cannot therefore be removed under existing conditions.

We find nothing to prohibit the Corporation from modifying the grade of instruction or from changing the formal organization of the Bussey Institution if the subjects Benjamin Bussey provided for are taught there. These are primarily Agriculture, Horticulture, Botany, together with numerous secondary subjects, some of which have developed and become important since Mr. Bussey drew his will. For example, Agricultural Chemistry, itself mainly a division of Biological Chemistry, concerned itself fifty years ago with soils, microscopic plants, and manures; it is now inevitably connected on every side with Bacteriology, Metabolism, Reproduction and Heredity, Pathology in Plants, Animals and Men, Protection and Immunity, and other subjects. Bacteriology, a study unknown in Mr. Bussey's time, has become of essential importance in Agriculture, not only because of its relation to healthy and diseased plants and animals, but on account of other phenomena, such as the ability of some micro-organisms to make the nitrogen of the air available for plant nutrition. Protection and Immunity, by means of sera and vaccines artificially prepared, is another subject unknown to Mr. Bussey; its relations to the welfare of Animals and Man are but various aspects of a single subject. Heredity and Breeding again have their applications to Plants and to Animals; the researches of Darwin and De Vries, the practical results of Burbank, Dawson, and others,

* " . . . they will establish there a course of instruction in practical agriculture, in useful and ornamental gardening, in botany, and in such other branches of natural science as may tend to promote a knowledge of practical agriculture and the various arts subservient thereto and connected therewith, and cause such courses of lectures to be delivered there, at such seasons of the year, and under such regulations as they may think best adapted to promote the ends designed." — Will of Benjamin Bussey of Roxbury. Printed copy, pp. 15–16.

the modifications in wheat already obtained, and the value of improved breeds of domestic animals, show the practical importance of this subject. Entomology is now of great economic importance; most of the divisions just mentioned contribute knowledge which is essential to methods devised to exterminate or control insects injurious to vegetation; and it has recently become clear that man and animals must also be defended from injurious insects, for example, the mosquito and the house-fly. Comparative Pathology and Veterinary Medicine may also, on certain sides at any rate, be grouped among the Bussey subjects. And each one of these branches of study has biological relations with every other. They may all be grouped, with many additions, as divisions of Applied Biology. Such a grouping is natural. They all are based upon pure science; they all have applications of economic importance to human welfare and success; and they are all what may be called University subjects.

We have considered four plans for the future of the Bussey Institution. These are, briefly, as follows: —

I. The present policy may be carried out, continuing the Bussey as an undergraduate school, making improvements when funds become available, but without changing the present purpose to give elementary instruction to men who have moderate preparatory training.

II. There may be a return to the original purpose of the Bussey Institution, including research as one of its objects, but with such an enlargement of its scope as to include many of the more recently developed branches of Applied Biology to which we have referred as Bussey subjects. This plan contemplates a special or separate school of Applied Science in Agriculture, or a School of Applied Biology.

III. There may be a fusion of the Bussey with some other department of the University. The best adapted for such a union is the Arnold Arboretum, which occupies a part of the Bussey Estate and adjoins the Bussey Institution. The Arboretum is a living museum of trees and shrubs, and is of practical value to students of those Bussey subjects having to do with trees and shrubs, such as Arboriculture, Forestry, Plant-breeding, Horticulture, Landscape Architecture, and Entomology.

IV. There may be a conversion of the Bussey Institution, by a change in the grade of its work, and in the form of its organization, into a Graduate Station for study and research in such Bussey subjects as may advantageously be pursued at Woodland Hill. According to this plan undergraduate students in these subjects would do their work in Cambridge under the Faculty of Arts and Sciences, and the B.A.S. degree would be given there. The Bussey would be administered by a Committee with a Chairman instead of by a Faculty with a Dean; a method now in operation in the University.

The first plan involves no change of policy, but merely a maintenance of the Bussey Institution as it is, with such improvements, and increase of subjects taught, as the gradual growth of resources naturally to be expected may make possible.

The second plan involves radical changes and large expenditure. It contemplates a School of Applied Science in Agriculture, or a School of Applied Biology, which finds its original in the early plan of the Bussey, adding thereto the related subjects which have been developed into importance since the Institution was founded. Such a school should rank in importance with the Medical School. In it men would be trained for new professions in applied biology. Its relations with the graduate departments of the University would be close, not only in Agriculture, Forestry, Botany, Geology, Engineering, Zoölogy, and Landscape Architecture, but in subjects affiliated to Medicine, Public Health, and Municipal Service, such as Bacteriology, Biological Chemistry, Comparative Pathology, Prevention and Immunity, Animal and Vegetable Products. The peculiar usefulness of this school would be in its advanced departments, for graduate study and research. There are now many State Colleges in the United States offering opportunities for advanced students, and the Federal Government, through the Department of Agriculture, and its numerous Experiment Stations, is carrying on most valuable investigations and widely publishing its results. There is, however, a field open for occupation by a school regarding its subjects biologically, from the point of view not only of public wealth, but of public health, and of public service. And, while it may be true that a School of Agriculture, in the restricted sense, might find a better location than eastern Massachusetts, this particular School of Applied Biology could not be better placed than as a department of

Harvard University. We have given this plan much of our attention. Should it seem worthy of further consideration it should be studied in detail and an effort should be made to obtain endowments. Its cost would be great. At present we are debarred from any definite advocacy by the absence of means.

The third plan is for a union of the Bussey Institution and the Arnold Arboretum under the present Director of the Arboretum, and the use of their joint resources for Bussey subjects common to both. Under this plan the present Bussey students would be transferred to Cambridge, or, if this proved to be impracticable, the courses now given would simply be discontinued. The land and buildings of the Bussey Institution would become available for the common purposes. Such part of the land, if any, as proved unavailable, could probably be sold, permission to sell being obtained, and the proceeds invested to bring in added income. The first subject to be undertaken should be Entomology, having as an immediate object the control of insects injurious to Vegetation in New England, such as the gypsy and brown-tail moths, and the elm beetle. The present income from the Bussey Trust would be sufficient to start this department of study and research with the ablest obtainable entomologist at its head. The next subjects should be Plant-diseases and Plant-breeding. These would require more money than Entomology. We think necessary funds could be obtained for work in these subjects because they promise to be of speedy practical value to the community. This plan is practical, but is open to the objection that it does not include all Bussey subjects.

The fourth plan is for the use of the Bussey Institution as a Graduate Station for study and research in any Bussey subjects for which means are now or may become available. Under this plan the undergraduates now taught at Forest Hills would be transferred to Cambridge where the degree of B. A. S. would be given under the Faculty of Arts and Sciences. Candidates for this degree would pass the entrance examinations; other students of these subjects would conform to the regulations applying to special students. The Bussey Institution would become a group of special laboratories with Professors and graduate students doing advanced and special work and making investigations in what might be, ultimately, a considerable number of related subjects. Among these might be nearly or quite all of those already enumerated as suited to be taught in the School of Applied Biology of plan two. The organiza-

tion of the Bussey Institution, as thus conceived, is not by means of a Faculty, but by subjects, each one directed by its department in the University, as is now done in the Graduate School of Applied Science. Under such an arrangement many courses would be directed by the Department of Biology. At present the study of Prevention and Immunity is closely related to the Medical School; should there be a Department of Public Health, it would be one of a group belonging there. Each subject undertaken at the Bussey Institution should have its Professor; its laboratory space and equipment, including land if needed, together with an allowance for investigation; and it would strengthen the utility of the Station if a small number of scholarships were attached to each subject. It is probable that one such subject directed by a master of it would soon attract as many specially prepared students as the total number of students now attending the Bussey Institution. It should be noted that under this plan — as might also be the case under that for a union with the Arboretum — the Bussey undergraduates are provided for in Cambridge so that the advanced work contemplated by this arrangement is an addition to University resources. The subjects suggested as those to be first undertaken are: Entomology, with special attention to the control of injurious insects; and Heredity, with its application to the breeding of animals and plants. Under this plan the Corporation might add to the land used by the Arboretum such area as seemed desirable, while retaining for certain future use ample ground for extensive laboratories in all advanced Bussey subjects for which the location is adapted, for the ultimate development of a Veterinary School, and for other uses not now foreseen. This plan is practical and does not seem to violate any of the obligations of the Corporation under the Bussey will.

CARROLL DUNHAM,
MOORFIELD STOREY,
J. ARTHUR BEEBE,
WALTER C. BAYLIES,
JOHN LOWELL,
AUGUSTIN H. PARKER,
WILLIAM H. RUDDICK,
WM. SUMNER APPLETON,
ISAAC S. WHITING.

We have signed the report but believe Plan I must be allowed to control the Bussey until more income becomes available. Given such an increase in income we find much merit in Plans II and IV. We see much to object to in Plan III and condemn it accordingly.

WM. SUMNER APPLETON,
ISAAC S. WHITING,
WILLIAM H. RUDDICK.

We have signed this report, but we believe that the third plan is the most feasible and best and should be adopted.

JOHN LOWELL,
AUGUSTIN H. PARKER,
WALTER C. BAYLIES,
J. ARTHUR BEEBE.

SEPTEMBER 25, 1907.

CC.

REPORT OF THE COMMITTEE TO VISIT THE JEFFERSON PHYSICAL LABORATORY AND DEPARTMENT OF PHYSICS.

To the Board of Overseers of Harvard College: —

Since the last report, the Committee have twice inspected the Laboratory and conferred with its officers, namely, on May 28, 1906, and on June 13, 1907, and now beg leave to report as follows: —

Besides the successful instruction of 480 students during the academic year 1906–07, numerous researches in various branches of physics have been conducted by the Director, his assistants, and eight graduate students, largely through the instrumentality of the Thomas Jefferson Coolidge Fund for Original Research. These investigations, after publication in scientific journals, will be incorporated in a volume of "Contributions from the Laboratory," which has been issued annually for the past three years. Taking as a basis of comparison the number of papers describing researches in physical science performed in American laboratories, which were published during 1904–05 in leading American and foreign journals, it appears that Harvard led with 15 papers, Cornell being second with 12, the Washington Bureau of Standards and Johns Hopkins University having each 7, while the Massachusetts Institute of Technology and several other institutions had 2 each. This relates to quantity, but having regard to the difficulty of the investigations and the methods used, it seems fair to conclude that the researches performed at Harvard and at Cornell were of wider scope than those in the other colleges and technical schools.

For the year 1906–07 the investigations at the Jefferson Laboratory have been as follows: —

Professor Trowbridge: — Study of the so-called Canal Rays, together with a study in the neighborhood of the Cathode, this work bearing upon the phenomenon of the X-Rays.

Professor E. H. Hall, assisted by two graduate students, Messrs. Serviss and Campbell: — The Thomson Effect.

Dr. Theodore Lyman: — Short Waves of Light.

Professor G. W. Pierce: — Investigations in Wireless Telegraphy.

Dr. H. W. Morse: — Study of Fluorescence.

Mr. P. W. Bridgman: — Investigations in Compressibility.

Dr. H. N. Davis: — Study of Longitudinal Vibrations.

Mr. Sawtelle: — Study of the Translation of Metallic Vapors in the Electric Spark.

Dr. J. M. Adams: — Selectivity of the X-Rays.

Mr. Cartmel: — Study of the Passage of Light through Thin Films.

Mr. Serviss: — Thermoelectric Investigations.

Mr. Shuddemagen: — Investigations in Magnetism.

The above list indicates the varied nature of the original work which is being done in this Laboratory, and the Committee desire to express their appreciation also of the high scientific quality and to recognize the distinction which it brings to this department of the University. To insure its continuance there is need of several research fellowships, yielding an income of one thousand dollars annually. With such financial aid, able men would be willing to undertake investigations lasting two years or more, to which they could then devote their whole time and thought without being forced to seek other means of livelihood.

The Laboratory and Department of Physics have suffered a severe loss, as regards instruction and investigation, through the illness of Professor Hall during the second term of the past year. The selection of Professor Sabine to be Dean of the Lawrence Scientific School has naturally curtailed the work of this distinguished investigator in the Laboratory.

A. LAWRENCE ROTCH,
E. D. LEAVITT,
HAMMOND V. HAYES,
ELIHU THOMSON,
FREDERICK P. FISH.

December 11, 1907.

CCI.

REPORT OF THE COMMITTEE ON INDIC PHILOLOGY.

To the Board of Overseers of Harvard College: —

The Committee on Indic Philology offers respectfully the following report.

The Department of Indic Philology is naturally one of the smallest in the College, measured by the number of its students; but your Committee finds it accomplishing, in its courses of instruction and its publications, a singularly broad and interesting work. Professor Lanman has given during the past year two half-courses in Elementary Sanskrit, and two half-courses in the Language and Literature of the Vedas; Dr. J. H. Woods, of the Department of Philosophy, has given a full course in the Philosophical Systems of India, with special reference to Vedanta, Sankhya, and Yoga.

Professor Lanman has also devoted much time to the continuation of the Harvard Oriental Series, a very comprehensive undertaking initiated by him sixteen years ago. This series, which is one of the most noteworthy publications issued by the University, was described in detail in our last report, and a prospectus of its plan is herewith enclosed. During the last academic year, Volumes VII and VIII appeared, and Volume X is now entirely printed at the Oxford University Press, Volume IX having been issued somewhat before the beginning of that year. As has been stated in previous reports, this series is carried on with the coöperation of leading oriental scholars of Europe and America. Besides the ten volumes now completed, about a dozen more are far advanced in preparation or in the press.

Nine volumes were described in our preceding report (1904); but special attention may now be called to Volumes VII and VIII, just mentioned. These contain Professor Whitney's posthumous translation of the Atharva-Veda, with critical and exegetical commentary (two volumes, super-royal octavo, 1212 pages). The tenth volume of the series is devoted to Professor Bloomfield's Vedic Concordance, which has been completely printed at the Oxford University Press. The editor describes this work as "an alphabetic index to every

line of every stanza of every hymn of the published Vedic Literature, and to every sacrificial and ritual formula thereof." "There can be no doubt," he adds, "that this Concordance and Whitney's Veda form the most important contributions to Vedic science that have been made within the last decade, whether in this country or in Europe, to say nothing of India. Moreover, the Concordance is a tool of the very first importance for future editors of Vedic texts."

We would call attention also to the interesting though difficult task in which Professor Lanman is now engaged — the completing of the great work left unfinished by the editor's pupil and friend, the late Henry C. Warren, comprehending two closely related undertakings: the making of a scholarly edition of the text of Buddhaghosa's Way of Purity, in the original Pāli language, and the making of an English translation thereof. "The book," says Mr. Lanman, "is a systematic treatise of Buddhism, setting forth in particular with great detail the system of mental training and self-control by which the Buddhist monk attained to that state of preternatural calm which is the most characteristic feature of Buddhism as a system." The text of this work is nearly ready for the press; the translation of about one-third has been made. Besides the above, the editor has material in hand relating to the ancient Beast-fables of India, of which five volumes are already well advanced. The Sanskrit text of Purna-bhadra's recension of the Pancha-tantra, dating from A.D. 1199, is now ready for the press, the printing being already in progress in Oxford. An English translation was made several years ago by the editor's assistant, Paul E. More; but so great changes have been since made in the text as to necessitate a thorough revision of this translation, on which the editor, with assistance of Dr. Hertel of Doebeln, is now engaged. Among the manuscripts from which the latter text has been established is a birchbark manuscript from Cashmere which contains a text fourteen centuries older than that of Purna-bhadra; which the editor describes as "one of the most interesting finds of the last quarter century in the field of Sanskrit philology." He is now engaged upon a translation of this text into English. Another volume soon to appear is the "History of the Pancha-tantra in India and its relations to the literature of Southwestern Asia and of mediaeval Europe derived therefrom." "This volume," the editor adds, "is one which belongs in nearly the same field as that occupied by the English and Scottish popular Ballads of the late Professor Child." A still further addition to the series is to be made by the publication of a "Concordance to the sacred verses of the Buddhist literature" by Professor Franke of the University of

Koenigsberg. This work, as yet incomplete, contains already 80,000 entries, and will constitute when finished "a most remarkable counterpart to the Concordance which Bloomfield has made for the Vedic Literature."

It is safe to assume that the publication of this unique series, aside from its value to scholars of every land, will eventually open the way to much ampler courses of instruction in the literature and religion of India than have been possible with the text-books thus far available.

EDWARD H. HALL,
WILLIAM STURGIS BIGELOW,
A. V. WILLIAMS JACKSON.

DECEMBER 11, 1907.

CCII.

REPORT OF THE COMMITTEE ON MUSIC.

To the Board of Overseers of Harvard College: —

The Visiting Committee for the Department of Music has the honor to report to the Board of Overseers.

The Department is still growing in numbers. In Music 1 (harmony) there is an increase over last year, from 40 to 52; in Music 3 (history), from 85 to 150; in Music 4 (analysis, etc.), from 15 to 35. The teaching force, however, is smaller, because of Professor Converse's resignation; if the Department continues to grow, an addition to the number of teachers will be necessary. This Committee, therefore, recommends the appointment of another teacher.

The present appropriation ($125) for incidental expenses is the same as it was ten years ago, while the demands of the Department have increased. This Committee recommends that a larger appropriation be made, and suggests the sum of $250.

ARTHUR FOOTE, *Chairman*,
PERCY L. ATHERTON,
EDWARD BURLINGAME HILL,
GEORGE A. BURDETT.

December 11, 1907.

CCIII.

REPORT OF THE COMMITTEE TO VISIT THE FOGG MUSEUM.

To the Board of Overseers of Harvard College: —

The Committee submit the following report: —

In the founding of New England's first college, Duty was the corner-stone, Beauty was looked upon with distrust. Founded for Christ and the Church, and for naked Truth, the College created Bachelors and Masters of Arts, yet ignored the Fine Arts until two hundred and thirty-nine classes had graduated. Then a beginning was made; the College opened to her students a course in the Fine Arts, a door small, but leading towards a vast treasure-house. Yet, excepting the portraits and busts in the Memorial and University Halls and the Library, there was nothing for the eye, however much the mind was edified by the lectures.

Happily, to meet this crying need, Mrs. Elizabeth Fogg was moved to found and give to the University an Art Museum in memory of her husband, "to be used for the collection and exhibition of works of art of every description and for the education and enlightenment of the people in respect to Art and the work of Artists."

To call attention to the value of this Museum, the need of it, its administration, the treasures which, as loans or gifts, it already contains, the use now made of these, and yet the inconvenience and disappointment constantly felt because of dark and limited quarters, the consequent discouragement to would-be benefactors, is the purpose of this extended report, with the hope of arousing interest that will result in remedy of the unfavorable conditions.

The Fogg bequest was timely and of great importance. It was a breaking of the ground. Good results began to follow. Unhappily, but from no fault of the giver, serious mistakes were made in the building — little light, faulty arrangement of rooms, and inadequate space. The Committee — as their predecessors have done — feel it their duty to emphasize these, for that changes and additions should be made seems to us imperative. Fitly to show even its present contents there is urgent need for extension, and for the money to accomplish this. Changes and additions required are explained

later in this report. Alumni and well-wishers are urged to visit the Museum, consider the need, and come to the aid of Art in the University. Even the initial mistakes, very difficult to correct, may act as a wholesome ferment to work out better things.

Special Function of the Museum.

The needed extensions have distinct limits. The Fogg Museum cannot be expected to approach in size those of large cities. Hence the view of the authorities of the University and the policy pursued up to this time have been that, while all the fields and periods of the Fine Arts should be there represented, the Museum should contain, not large collections of works exemplifying these, but a *selection* made with great care and in a distinctly conservative spirit. In this view your Committee concur. For example, it is well that there should be casts there of statues and reliefs from Egyptian, Assyrian, Hellenic, Roman, Gothic, Renaissance, and even modern sources, but the best types, in sequence, of the different periods should be chosen from many. With regard to originals of statues or paintings given by benefactors, a policy quite so strict cannot be maintained, for the very best are out of reach; yet in these cases great care should be exercised, and always in purchasing. Your Committee advise against acceptance of collections which must be kept together, unless the nature and unusual merit of the objects justify such assemblage.

Administration.

That the administration of the Museum should be liberal was an admirable condition of the bequest. It has been so in hospitality to the public. We hope that as the knowledge of its existence and present holdings spreads, with consequent increase in its wealth in objects of art, its administration will be, not only as catholic, but as active, as befits a great university. It should be in every way possible effective in the institution itself and in the community. It can be used to immediate advantage, not only by the Fine Arts Department, but by the Classical, Historical, Architectural, Anatomical, and Physical Training departments. General culture is and always should be a main object in college. Candidates for degrees as Bachelors and Masters of Arts should be influenced to become in some degree familiar with choice specimens of refined human workmanship. In their reading they hear of these; they should see them close at hand. Some eyes would be opened and some spirits refreshed. A few such experiences in each class would justify the existence of the Museum. Again, for persons in or outside of the

University whose studies, scientific or technical, demand all their hours, the occasional awakening of the aesthetic faculties seems important. To outsiders engaged in study or practice of industrial affairs, or students who later engage in them, the pottery, metal work, textiles (when they come), carvings and coins should be useful for study.

Contents.

It seems well to give a short summary of the groups of objects now shown in the Museum, although most of these have been mentioned from time to time in the reports of the Director. The gifts of the founder, the casts bought with part of the bequest, and also the beginning of the great collection of photographs, were the first furnishings of the Museum. The large and valuable Gray and Randall Collections of Engravings, given long since to the College, have at last found their proper home. Nearly every year since the Museum was opened, it has had generous gifts or indefinite loans of the most important and valuable kind, namely, originals of merit, both of Renaissance painting and Greek sculpture, pottery, and bronzes, English water-colors by Turner and other masters, and etchings. There is a possibility that, partly because of their disadvantageous placing, some of the most valuable paintings may be transferred to the new Museum of Fine Arts in Boston; yet we believe that, were proper provision made for their exhibition here, many of them would remain.

In speaking of the originals we must call attention to the singular beauty of the marble Meleager, a statue of the best period, given by Miss Forbes (now Mrs. Kenneth G. T. Webster). The head and trunk are nearly perfect, except for the breaking of the nose. During the present year, through the generosity of Messrs. George W. Harris, James Loeb, Edward W. Forbes, and Dr. Rupert Norton, interesting and highly valuable paintings, drawings, etchings, statues, and bronzes have been received as gifts or loans, as enumerated in the Director's report.

We believe that benefactions of this kind will surely continue to come in from alumni of Harvard, alumnae of Radcliffe, or other lovers of Art and of the University.

Besides the originals above mentioned, there are the replicas of interesting bronze medals of the Renaissance period, given by Mr. Horatio G. Curtis, which are in the same room with the electrotype reproductions, lent by the Departments of the Classics and of the Fine Arts, of the coins of the cities of Hellas, Phoenicia, Syria, and

Egypt, and of the gold cups, masks, ornaments, and decorative daggers from the tombs at Mycaenae. Near by is one of the beautiful bronze tripods lent by Mr. Loeb, its fragments most ingeniously and successfully put together, also a bronze cista. In the next room the fragments of the moulds of the delicately adorned Arretine pottery are shown, one of the largest collections of the moulds of this ancient pottery that exists and of the greatest beauty. The Committee desire to express their high appreciation of the value of the loans made by Mr. Loeb, and venture to express a hope that the two tripods, temporarily removed for exhibition elsewhere, may be restored to the charge of the Museum in order that this group of objects of exceptional interest and mutually illustrating each other may be complete. The Department of the Classics has placed its interesting collection of the busts of Julius Caesar in a room on the east side of the lower floor.

The Library of the Museum, very small and technical, has received this year some valuable works from various liberal donors.

The photographs, wisely and widely chosen, the best work of Braun, Alinari, Anderson, Hanfstängel, and others, are numbered by thousands, well catalogued, well arranged, and, best of all, freely accessible. They represent the work of the Masters, — paintings, drawings, sketches, sculpture, architecture; also the findings of the archaeologists.

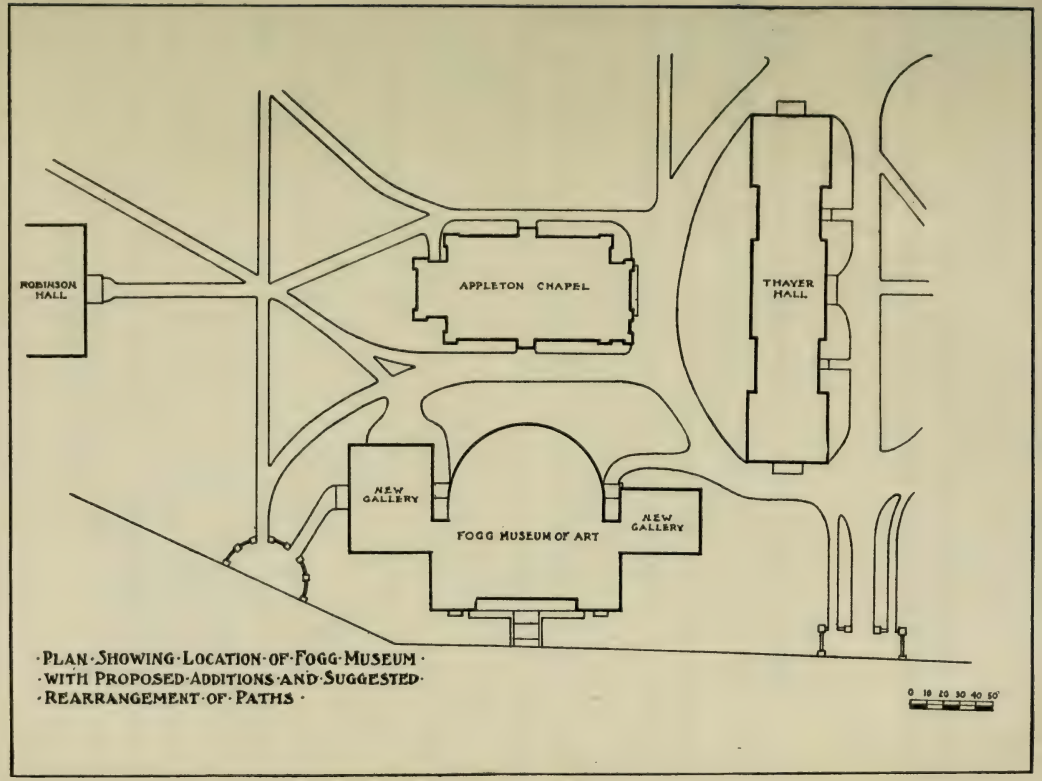
Wants of the Museum.

So much for the wealth of the Museum in objects of art, thus far. It may be said in passing that it has no textiles, no armor, and is poor in Asiatic Art of any kind excepting a few specimens of porcelain, bronzes, and carved wood and ivory included in the original Fogg bequest.

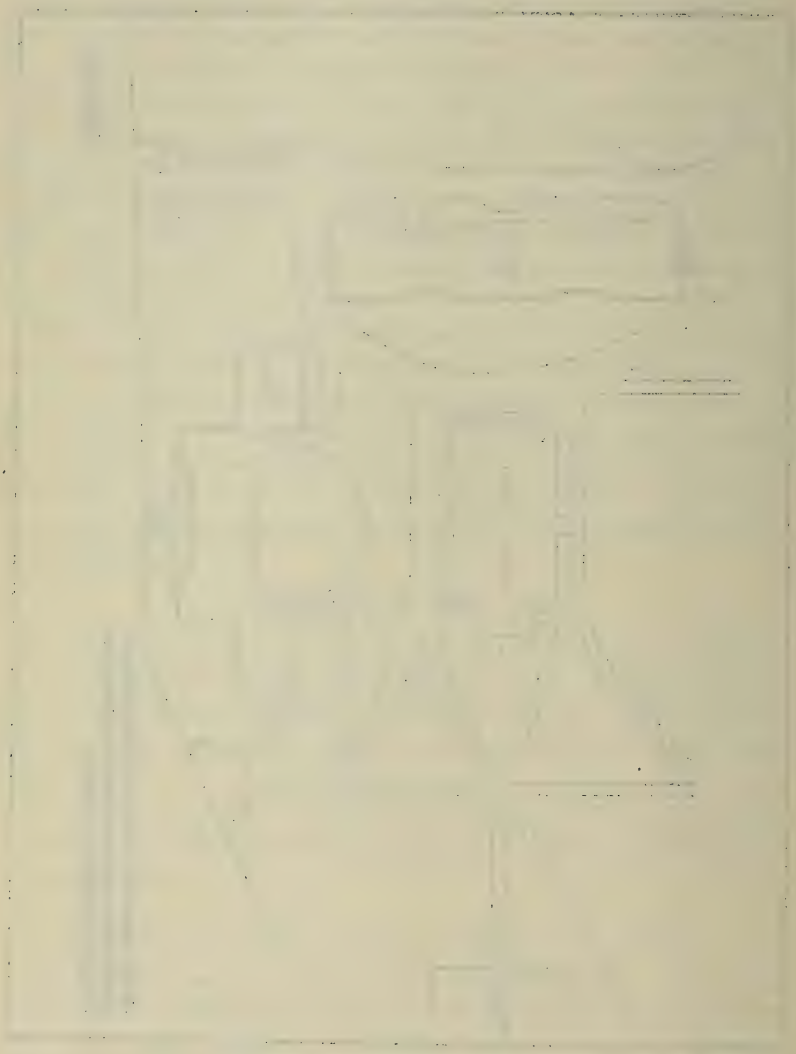
It would be a great convenience to students of Art if many standard books, for which they must now go to the College Library, were in the Museum.

Common Use of the Museum, Intended and Actual.

First, of this, as of any museum wisely administered, may be said, in the words of Martin Brimmer as to the purpose of the Museum of Fine Arts, that it exists "for the education and delight of the community"; second, and especially, for the cultivation and teaching of the whole body of officers and students of the University. Actually, its use, — sure to ensue, — is but well begun, and yet the need of those who come thither of space to work in, and light to rightly see



·PLAN·SHOWING·LOCATION·OF·FOGG·MUSEUM·
·WITH·PROPOSED·ADDITIONS·AND·SUGGESTED·
·REARRANGEMENT·OF·PATHS·



its highly valuable works of art, is sorely felt. It is daily used by students in the Fine Arts courses at Harvard and Radcliffe; also, to a less extent, by students in some Classical and Historical courses. For the students of Architecture who daily use the Museum — though the building is not a good object lesson — its collections are supplemental in training the eye and the taste. Students are allowed to copy in the gallery under restrictions due to its small size. The admirable photographs are indispensable to a study of the history and growth of Art. This collection is constantly growing. Slides for the lantern have been made from many of these so that they can be seen by large audiences and explained.

Hospitality.

The hospitality of the Fogg Museum is worthy of all praise. The photographs have been freely lent to proper persons, teachers of Art in schools and neighboring colleges, for use in classes. Even the valuable slides have been lent for lectures, but this has lately been found not always to be practicable. Any visitors to the Museum can have, by the intentions of the founder and the courtesy of the Management, the privilege of freely examining the photographs, and can be shown the rare engravings by the assistants on duty. This privilege is highly important to those who have entrusted to them the choosing of pictures for libraries, schools, or even private use. The ordering is made easy, for the name of the photographer, his address, the number of the photograph in his catalogue, and the place where the original can be seen, can be here noted. It is quite possible that a chance sight of the cups and weapons from the ancient tombs of Greece, the beautiful fragments of vases, and the tripods, may so stir a passing student as to open his or her eyes to a possible interesting and happy career in sharing or promoting archaeological research. There lies, off Anticythera, the broken trireme in fifteen, and forty, fathoms of water, with its load of wonderful statues in bronze and marble, which the Greek government is too poor to raise. There lies a sure treasure-house of art and letters, Herculanean, under but a few feet of hard soil, known now to be easier to open than many a silver mine of doubtful value.

Present Needs.

First of these is light. Paintings of very great value, placed in the Museum by a few generous friends, already fill the best place which the Museum affords. Yet that could hardly be worse. Indeed, on many a day in winter they cannot be seen at all, when a

thick coating of snow, perhaps frozen, lies on the flat skylight, the only source of illumination. This condition, now well known, if allowed to continue, may well shut off loans or gifts.

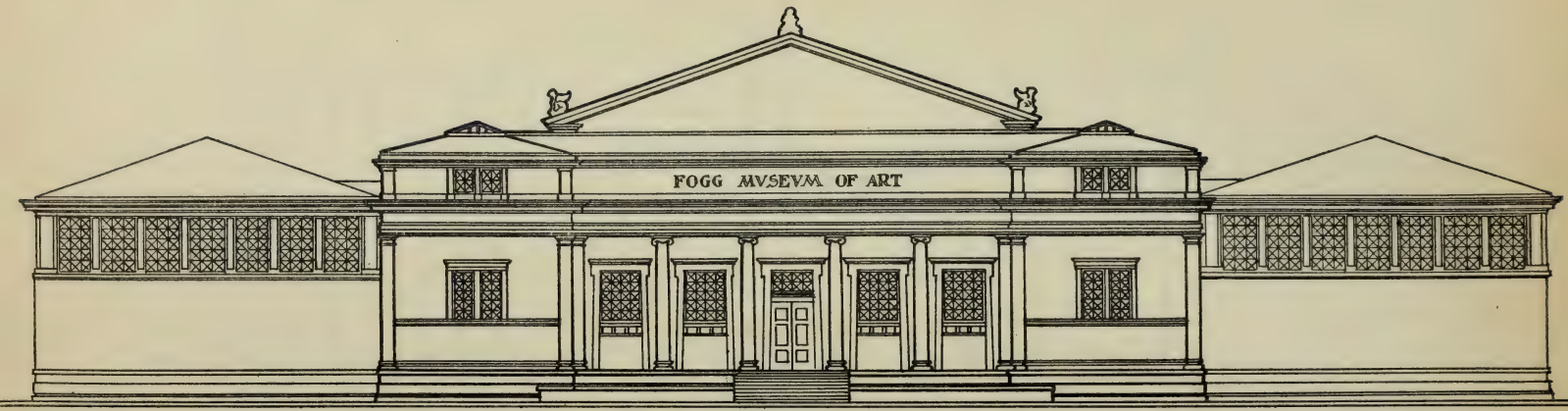
The same condition with regard to the skylighting exists in the photograph and print rooms and in the quarters of the Director and Staff. Snow must actually, at the risk of the glass, be shovelled off a flat roof of considerable size. This portion of the roof can only be reached by a vertical ladder, up which the workman must carry his tools, and then force open a trap-door weighted with snow, some of which, when the door yields, falls on him, on a wall hung with pictures, and on the main staircase. Such a condition of affairs is intolerable. It has been found that a door can be without difficulty cut from the attic of the Museum over the lecture hall to open directly on to the flat roof over the front of the building. By this means the janitor could conveniently get out to remove the snow which darkens the skylight. This would palliate the bad conditions.

But space in some degree adequate to hold and show the treasures now in the Museum and offering room for those that must come in the next few years, is a crying need to which we would urgently call attention.

New Wing for Exhibition Room.

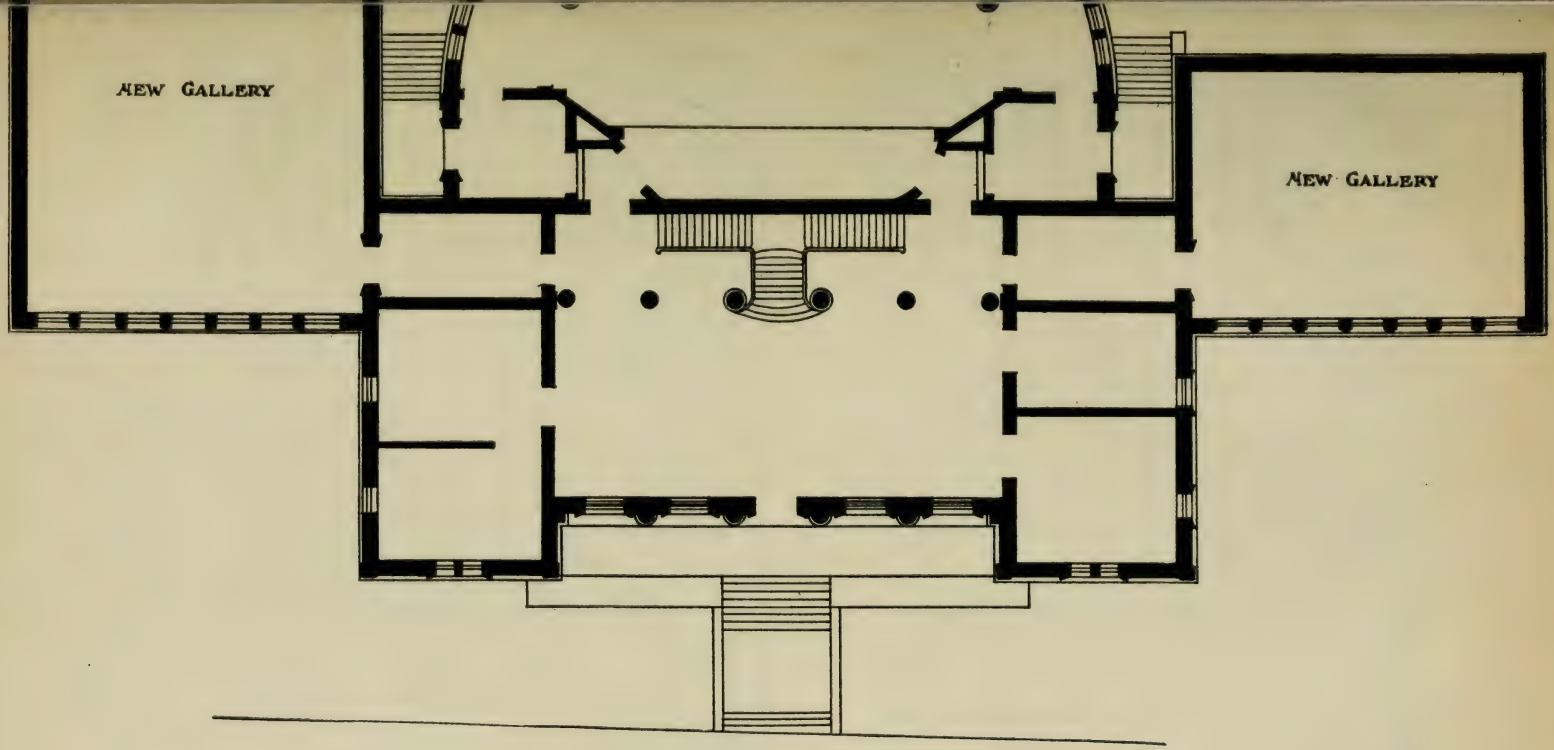
A plan is herewith submitted, designed by Professor Warren of the Architectural School, for two wings affording well-lighted galleries for the exhibition of pictures and sculpture. With regard to light, happily the situation of the Museum, with two broad streets and the open part of the Delta on the north, secures ample supply for these wings, in which proper windows are provided. Though the space is limited, there is enough for these wings, symmetrical in position, though unequal in size. The funds are wanting, but the need should call them forth. The smaller wing will for some time to come meet the needs for hanging pictures, while its well-lighted basement would furnish a satisfactory room for drawing. Ground should be saved for the larger wing in due time. The approximately estimated cost for the wings would be respectively $39,000 and $50,000, and the flights of steps necessitated by them, on the sides of the Museum where they join, each $400.

Your Committee can only express their confident hope that the opportunity to serve the University and the community at large by the erection of one or both of these wings will appeal to individuals, or classes.



· FRONT · ELEVATION ·

· STUDY · FOR · ADDITIONS · TO · THE · FOGG · MUSEUM · OF · ART ·
· CAMBRIDGE · MASS ·



PLAN

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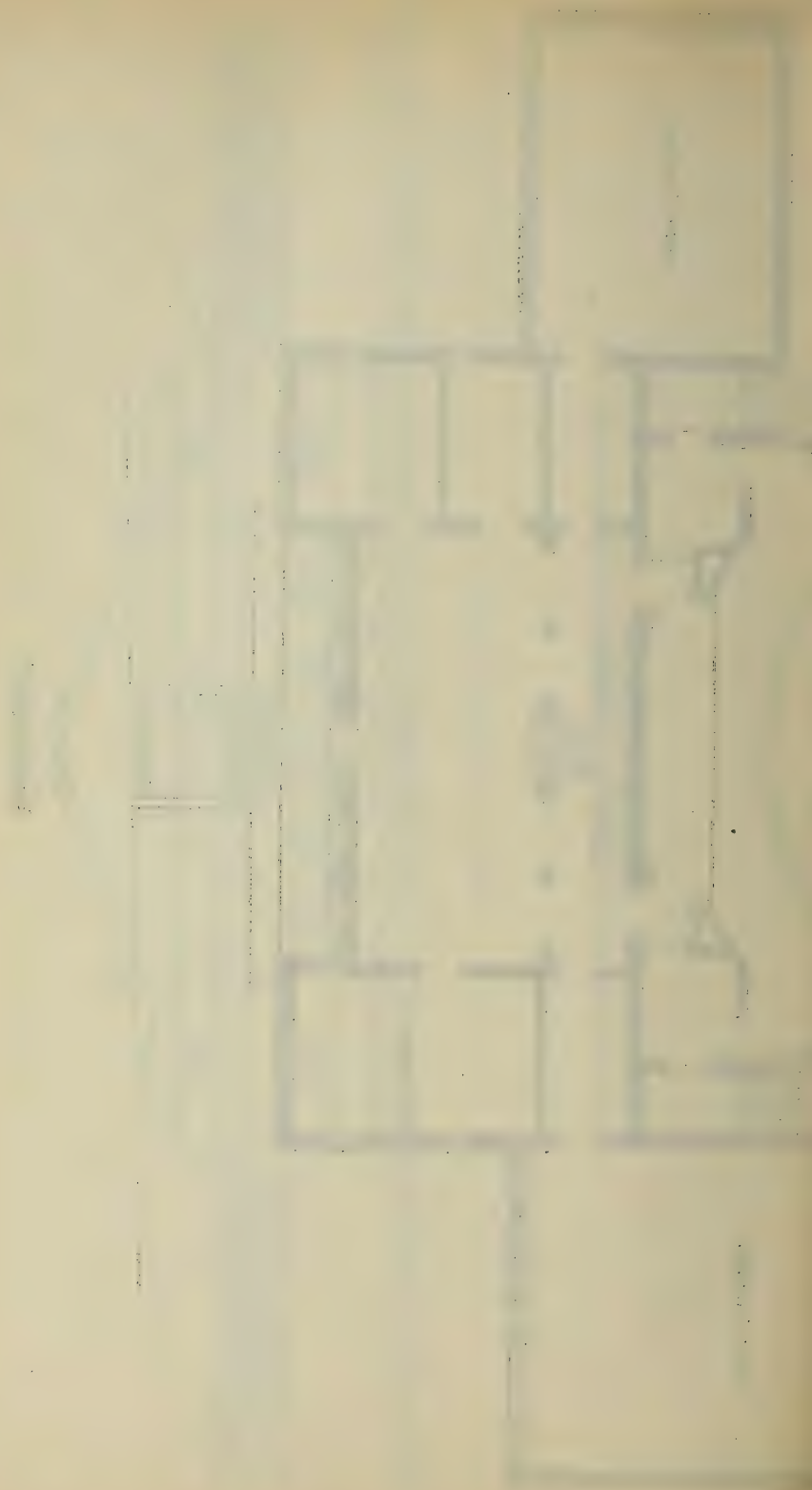


A Drawing Room.

Another need, to which the Committee on Fine Arts has formerly called attention, and which this Committee now urge for consideration, is that of some suitable provision for students who, either in their courses or of their own motion, desire to copy. At present such students are at disadvantage in the restricted space and bad light of the present gallery, where they are often in the way, in the opinion of the Director. If it is urged that they work in Sever Hall, the answer is that it is not allowed to move the paintings and prints which they wish to copy from the building. For the time, this need might be met — poorly indeed — if the north-east room on the ground floor were provided with a dozen tables and table-easels, and students were allowed to work from water-colors, prints, or photographs placed in frames with movable backs, and padlocked, if necessary, the students signing for the pictures and becoming responsible for them. The expense would be very slight.

There is complaint that in cold weather there is sometimes so much noise in the steam-pipes that the speakers in the lecture-hall cannot be heard. This condition should be remedied.

Publicity and Reciprocity.

It seems desirable to the Committee to do something to make the Museum and its contents better known, and increase its influence and the interest which, if known, it should surely excite. The printing of an occasional bulletin, which should be obtainable at the door, or could be mailed to friends, would seem desirable. Also, that an occasional lecture on the contents of the Museum, or some germane topic, be given by the Director or other professor or artist.

The Committee would strongly urge on the attention of the governing body of the University one measure — at once liberal and economical — which would greatly enlarge the value and scope of the Fogg Museum, call attention to it, and increase the interest felt in it. It is practicable and in no way obstructed by the terms of the bequest, but is rather in its spirit; namely, this, — the inaugurating a policy of reciprocal loans with the Museum of Fine Arts. It would benefit both institutions, their students, and the general public, and keep the interest in both fresh. Both Museums would be gainers, but the Fogg Museum would certainly be the greater by such an arrangement.

Recommendations.

We therefore recommend, —

First, That a door be opened immediately from the attic to the flat roof.

Second, That the noise in the steam-pipes be abated, if possible.

Third, That a wing for the exhibition of pictures, according to the plan for the smaller wing accompanying this report, be erected as soon as any funds be found for this purpose.

Fourth, That the Renaissance Cast Room be temporarily used for a drawing-room.

Fifth, That a Bulletin of the Museum be issued, from time to time, and that an occasional lecture relating to its contents or other topic connected with Art, be arranged for by the Director and Fine Arts Committee.

Sixth, That a committee be appointed to consult with the authorities of the Boston Museum of Fine Arts concerning reciprocal loans between the two institutions.

Finally, To further the attainment of the objects set forth in the foregoing report, it is

Recommended, That an assistant to the Director, or a Curator, be appointed, provided funds can be found for his salary.

CHARLES E. NORTON,
J. RANDOLPH COOLIDGE, Jr.,
FRANCIS BARTLETT,
FRANK D. MILLET,
EDWARD W. EMERSON,
FRANCIS BULLARD.

December 11, 1907.

COMMITTEES APPOINTED BY THE BOARD OF OVERSEERS.

1908.

ON ELECTIONS.

Moorfield Storey,
James J. Storrow,
Stephen M. Weld,
William Caleb Loring,
Edmund Wetmore.

ON REPORTS AND RESOLUTIONS.

Edwin P. Seaver,
Winslow Warren,
Francis L. Higginson,
Louis A. Frothingham,
John Noble,
William W. Goodwin,
Frederic A. Delano.

ON DEPARTMENTS.

To visit the Divinity School.

Paul R. Frothingham,
James DeNormandie,
Daniel Merriman,
Horace S. Sears,
Francis H. Rowley,
John A. Bellows,
Augustus M. Lord,
Albert P. Fitch.

To visit the Law School.

William Caleb Loring,
James T. Mitchell,
Edmund Wetmore,
Louis D. Brandeis,
Joseph B. Warner,
George Putnam.

To visit the Medical and Dental Schools.

David W. Cheever,
George B. Shattuck,
Alexander Cochrane,
Edmund D. Codman,
William Sturgis Bigelow,
Henry H. Sprague,
Luther D. Shepard,
Henry Saltonstall Howe,
Henry P. Bowditch,
John Collins Warren,
William Lambert Richardson.

To visit the Bussey Institution.

Carroll Dunham,
Moorfield Storey,
J. Arthur Beebe,
Walter C. Baylies,
John Lowell,
Augustin H. Parker,
William H. Ruddick,
William S. Appleton,
Isaac S. Whiting,
Simon Flexner,
Daniel W. Field,
Warren A. Reed.

To visit the Library.

Francis R. Appleton,
Samuel A. Green,
Charles C. Smith,
Francis Shaw,
Gardiner M. Lane,
George Lee Peabody,
Clement W. Andrews,
William A. Gaston,
Henry Saltonstall Howe.

To visit the Observatory.

Simon Newcomb,
Edwin P. Seaver,
Henry S. Huidekoper,
Charles S. Fairchild,
Robert Treat Paine,
Charles P. Bowditch,
George I. Alden,
Anna P. Draper (Mrs. Henry Draper),
George R. Agassiz,
Elihu Thomson.

To visit the Botanic Garden and Botanical Museum.

Frederic A. Delano,
David Pingree,
Nathaniel C. Nash,
Oliver Ames,
Elliot C. Lee,
Mary Lee Ware (Miss),
Edwin F. Atkins,
Arthur F. Estabrook,
Walter Hunnewell,
William Powell Wilson.

To visit the Gray Herbarium.

Amory A. Lawrence,
George G. Kennedy,
Nathaniel T. Kidder,
Emile F. Williams,
Walter Deane,
George W. Hammond,
George R. White,
John E. Thayer,
Joseph R. Leeson.

To visit the Museum of Comparative Zoölogy.

David W. Cheever,
Augustus Hemenway,
Louis Cabot,
George P. Gardner,
Henry S. Hunnewell,
Dudley L. Pickman,
Francis N. Balch,
William Brewster,
John E. Thayer,
Rodolphe L. Agassiz.

To visit the Peabody Museum.

Augustus Hemenway,
Charles P. Bowditch,
Henry W. Haynes,
Jesse W. Fewkes,
Clarence J. Blake,
Clarence B. Moore,
Elliot C. Lee,
Louis J. de Milhau.

To visit the Germanic Museum.

Henry W. Putnam,
Clement S. Houghton,
Heinrich Conried,
George A. Bartlett,
Otto H. Kahn,
David P. Kimball,
Edward R. Warren.

To visit the Arnold Arboretum.

Stephen M. Weld,
Walter Hunnewell,
Charles E. Stratton,
Mary S. Ames (Miss),
Abby A. Bradley (Miss),
Nathan Matthews, Jr.,
John E. Thayer,
Frank G. Webster,
Charles A. Stone,
Herbert Parker.

To visit the Semitic Museum and Division of Semitic Languages and History.

Jacob H. Schiff,
William Caleb Loring,
Isidor Straus,
George Wigglesworth,
William C. Endicott,
John Wells Morss,
Henry W. Peabody,
David A. Ellis,
Herbert E. Davidson.

To visit the Fogg Museum.

Charles E. Norton,
J. Randolph Coolidge,
Francis Bartlett,
Frank D. Millet,
Francis Bullard,
Edward W. Emerson,
Arthur Fairbanks.

To visit the Lawrence Scientific School and the Graduate School of Applied Science.

Frederick P. Fish,
Henry S. Huidekoper,
Erasmus D. Leavitt,
John Lawrence,
A. Lawrence Rotch,
Charles H. Manning,
James J. Myers,
Philip Stockton,
Hammond V. Hayes,
Carroll Dunham.

To visit the Graduate School of Arts and Sciences.

William W. Goodwin,
Stratton D. Brooks,
Gardiner M. Lane,
Edward W. Forbes,
A. Lawrence Rotch,
Charles P. Bowditch,
Owen Wister,
Edward Robinson.

To visit the Jefferson Physical Laboratory and Department of Physics.

A. Lawrence Rotch,
Frederick P. Fish,
T. Jefferson Coolidge,
Elihu Thomson,
Erasmus D. Leavitt,
Elliot C. Lee,
Samuel Hill,
Hammond V. Hayes.

To visit the Chemical Laboratory.

David W. Cheever,
Edward D. Pearce,
Clifford Richardson,
James M. Crafts,
Joseph Wharton,
Morris Loeb.

To visit the Stillman Infirmary.

Clarence J. Blake,
David W. Cheever,
Augustus Hemenway,
George B. Shattuck,
James A. Stillman,
Philip B. Howard,
John T. G. Nichols,
Herbert B. Howard,
Edmund H. Stevens.

ON PHYSICAL TRAINING, ATHLETIC SPORTS, AND SANITARY CONDITION OF ALL BUILDINGS.

Francis L. Higginson,
Moses Williams,
Louis A. Frothingham,
Edward D. Brandegee,
Robert F. Clark,
Edwin Farnham,
Maurice H. Richardson,
William Hooper,
Clarence J. Blake,
Samuel H. Durgin.

ON THE ADMINISTRATION OF THE UNIVERSITY CHAPEL.

George Wigglesworth,
George A. Gordon,
William Lawrence,
Paul R. Frothingham,
Samuel M. Crothers,
Roland W. Boyden,
William DeWitt Hyde.

ON THE RELATION OF THE UNIVERSITY TO SECONDARY SCHOOLS.

Edwin P. Seaver,
Amory A. Lawrence,
James J. Storrow,
John Goddard Hart,
Wallace Clement Sabine,
Edgar H. Wells,
Edward J. Goodwin,
Alfred Ernest Stearns,
William Clinton Bates.

ON THE TREASURER'S ACCOUNTS.

Stephen M. Weld,
William Endicott, Jr.,
Samuel Hill,
William C. Endicott,
Gordon Abbott,
Grafton St.L. Abbott,
Allan Forbes,
Arthur Lyman,
Richard C. Storey,
John L. Saltonstall.

FOR THE COLLEGE.

ON GOVERNMENT.

Moorfield Storey,
William Lawrence,
Edwin P. Seaver,
Winslow Warren,
William A. Gaston,
Gardiner M. Lane,
Charles C. Jackson.

FOR THE COURSES OF INSTRUCTION.

ON INDIC PHILOLOGY.

Edward H. Hall, A. V. Williams Jackson, William Sturgis Bigelow, Paul Elmer More.

ON THE CLASSICS.

Gardiner M. Lane, William W. Goodwin, Babson S. Ladd, Henry B. Chapin, W. K. Richardson, Prentiss Cummings, W. Amory Gardner,

ON ENGLISH LITERATURE.

Robert Grant, Samuel M. Crothers, William R. Thayer, Hammond Lamont,

ON COMPOSITION AND RHETORIC.

Moorfield Storey, George R. Nutter, Hammond Lamont, Edward S. Martin,

ON GERMAN.

Frederick P. Fish, George Francis Arnold, Marshall W. Davis.

ON FRENCH.

J. Templeman Coolidge, Jr., T. Russell Sullivan, Francis McLennan, Gordon Abbott,

ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY.

George B. Shattuck, J. Randolph Coolidge, William R. Thayer, James Geddes, Jr., William B. de las Casas.

ON HISTORY.

John Noble, William F. Wharton, William R. Thayer,
Frederic J. Stimson, Henry H. Edes.

ON GOVERNMENT.

Frederick P. Fish, James T. Mitchell, Charles S. Hamlin,
Samuel W. McCall.

ON POLITICAL ECONOMY.

Arthur T. Lyman, Frederic A. Delano, John F. Moors,
Charles S. Fairchild, William Endicott, Jr., J. Wells Farley,
Charles G. Washburn.

ON PHILOSOPHY.

Reginald C. Robbins, Richard C. Cabot, William R. Warren,
George B. Dorr, Richard H. Dana, Joseph Lee.

ON EDUCATION.

James J. Storrow, John F. Moors, Grafton D. Cushing,
George D. Markham, William Taggard Piper, Frederic P. Cabot.

ON FINE ARTS AND ARCHITECTURE.

C. Howard Walker, Frederic P. Vinton, Daniel H. Burnham,
Robert S. Peabody, R. Clipston Sturgis, Edmund C. Tarbell,
Holker Abbott, Charles F. McKim.

ON MUSIC.

Arthur Foote, Edward B. Hill, George A. Burdett,
George D. Markham, Percy L. Atherton, Horatio A. Lamb,
Owen Wister.

ON MATHEMATICS.

William Lowell Putnam, Simon Newcomb, Philip Stockton.

ON ENGINEERING.

Frederick P. Fish, James J. Storrow, Charles C. Schneider,
Joseph R. Worcester, Charles H. Manning, Edwin W. Rice, Jr.,
Edmund A. Stanley Clarke, Frederick W. Taylor.

ON BOTANY.

Nathaniel C. Nash, George G. Kennedy, Walter Deane,
Edward L. Rand.

ON ZOÖLOGY.

David W. Cheever, Henry S. Hunnewell, William Brewster,
Augustus Hemenway, Dudley L. Pickman, John E. Thayer,
George P. Gardner, Francis N. Balch, John C. Phillips,
Rodolphe L. Agassiz.

ON GEOLOGY, MINERALOGY, AND PETROGRAPHY.

Rodolphe L. Agassiz, George P. Gardner, Raphael Pumpelly,
William Sturgis Bigelow, William E. C. Eustis, Benjamin K. Emerson,
Herbert E. Gregory.

ON MINING AND METALLURGY.

John Hays Hammond, Quincy A. Shaw, Jr., Henñen Jennings,
Charles P. Perin, Frank H. Taylor, Benjamin B. Thayer,
R. Alexander F. Penrose, Jr., Edgar C. Felton, Albert F. Holden.

ON FORESTRY.

Charles F. Adams, James W. Brooks, George C. Cutler,
John S. Ames, Frederick J. Caulkins, Henry James, 2d,
James S. Russell, John E. Thayer.

CCIV.

REPORT OF THE COMMITTEE TO VISIT THE ARNOLD ARBORETUM.

To the Board of Overseers of Harvard University: —

Your Committee to visit the Arnold Arboretum performed their duties the latter part of October, and were much impressed with the development of the institution during the past year.

The Arboretum is now recognized everywhere as one of the most important and progressive and best managed dendrological stations in the world, and as one of the largest, most beautiful, and interesting of all the scientific gardens. There is no collection in the world that surpasses the Arboretum's collection of woody plants hardy in this climate. It has an important herbarium, and a library which is one of the most complete in the world as far as literature relating to trees and their cultivation is concerned. A great deal of most useful scientific work has been accomplished by its officers. Its influence in the improvement of American horticulture is well known, and it is rightly considered an important part of the educational equipment of this city and of the whole country.

Your Committee feel that a great debt of gratitude is due to the Director of the Arboretum for the scientific work carried on in the past at a wonderfully small expense. If its position as a first-class scientific station is to be maintained and its usefulness extended, a larger endowment than it now has is absolutely necessary. To the personal efforts of the Director, and to his efforts in raising from the friends of the institution large sums of money, is due the success that has attended the Arboretum. It would be probably impossible to get another Director who would contribute so largely in every way to the success of the institution, and unless an assured income can be secured for the Arboretum, his death or resignation would render it impossible to extend the work of the Arboretum or to maintain it on its present scale.

The Arboretum not only needs more money, but it requires more land for the cultivation and proper display of its collections. These are likely to be very largely increased by the explorations undertaken in western China and made possible by the Director and some

of his friends. Your Committee believe that the land belonging to the University between South Street and the Dedham branch of the New York, New Haven & Hartford Railroad, and separated from the Arboretum only by South Street, can be made most useful by adding it to the Arboretum.

The scientific work that has been done at the Arboretum has been chiefly relating to the morphology of trees and shrubs and their cultural requirements. It would seem that with the opportunities before them the Arboretum should be enlarged in the way of scientific investigation of the diseases of trees and insects which are injurious to trees and other plants. Your Committee believe that the Arboretum is better equipped for this purpose than any other institution in the State, but to do this more money is needed. Your Board and the community must not forget that the University has in its Arboretum an institution unlike any other garden in America or in Europe, and that, an object of pride to the citizens of Boston and to the whole country, it is also deserving of the generous support of the citizens of Boston and of the whole country. It is to be hoped that the public and the University will recognize the necessity for some such action on their part.

STEPHEN M. WELD,
WALTER HUNNEWELL,
FRANK G. WEBSTER,
CHARLES E. STRATTON,
NATHAN MATTHEWS,
CHARLES A. STONE,
AUGUSTUS HEMENWAY,
MARY AMES,
ABBY A. BRADLEY,
JOHN E. THAYER.

February 26, 1908.

CCV.

REPORT OF THE COMMITTEE ON PHYSICAL TRAINING, ATHLETIC SPORTS, AND SANITARY CONDITION OF BUILDINGS.

To the Board of Overseers of Harvard College: —

Your Committee on Physical Training, Athletic Sports, and Sanitary Condition of Buildings begs leave to submit the following report: —

It suggests that it be relieved of the last part of its duties, since the sanitary condition of buildings is, or should be, in the hands of an expert. Even if your Committee were competent to judge of such matters, which it is not, it would take probably many months to make even a superficial examination.

Your Committee has seen with great pleasure the decided improvement made since its last report in the game of foot-ball. It now wishes to call attention to the bad conditions prevailing both in hockey and basket-ball, quite as bad perhaps as in foot-ball three years since. It recommends that, until a radical improvement is made in the way it is played, the game of basket-ball with other institutions be forbidden.

For the Committee,

F. L. HIGGINSON, *Chairman.*

March 9, 1908.

CCVI.

REPORT OF THE COMMITTEE ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY.

To the Board of Overseers of Harvard College: —

Your Committee, having met several times and members of the Committee having attended various courses and having communicated with the head of the Department and with other instructors, submit the following report: —

ITALIAN

We notice there are five courses given in Italian this year, and next year, when Italian 3, on Italian literature of the thirteenth and fourteenth centuries, will be omitted, there will still be four courses. The attendance on these courses is 76 students. In the elementary course (1), which consists of three hours a week, one third of the time is given to lectures on literature by the younger men who give this course. This seems to your Committee a little disproportionate. In general, the instruction seemed to be very satisfactory.

SPANISH

In Spanish this year there have been only two courses, 1 and 5. Next year, if all the courses now announced should be given, there would be five courses in Spanish. Whatever the reason for this irregularity, we hope some way of overcoming it may be found. Not only is there a disproportion between the different years, but also between the amount of attention given to Italian and to Spanish. To your Committee Spanish really seems to be for the students of to-day, from any other than the purely literary point of view, the more important language of the two. Moreover, the attendance on the Spanish courses is 135 as against 76 on the Italian courses. Italian 1 attracts 43 students, and Spanish 1, 98 students; Italian 5 has 4 students, and Spanish 5 has 37 students. We learn with pleasure that another year an opportunity will probably be available for securing a course in Commercial Spanish. This would realize hopes expressed by your Committee in more than one previous report.

ROMANCE PHILOLOGY

Just at present there are but two courses given in Romance Philology: Course 3 (Old French) and 2*a* (Comparative Philology). The former is pursued by 21 students, the latter by 16. Next year there will probably be four courses and a half given under Romance Philology: 3 (Old French), 4 (Provençal), 5 *hf.* (Low Latin), 6 *hf.* (Portuguese), 7 (Anglo-French), and 2*b hf.* (General Introduction to Linguistic Science). The criticism already made on the Spanish courses in regard to the lack of proportion between the number of courses given in any one year and the number given the following year applies here with equal force. The recommendation, therefore, of your Committee is that more care be taken from year to year in distributing the courses evenly.

This semester Professor Sheldon is taking a half-year off, not for the purpose of rest, but to enable him to give more time to the very considerable amount of research work with which he has long been identified. His Course 3 is ably conducted by Mr. R. L. Hawkins, a graduate of the Class of 1903, who since graduating has studied in Europe and taught in the University of Missouri.

Your Committee had the pleasure of visiting Comparative Philology 2*a*, given by Professor Grandgent, and of seeing a number of experiments skilfully performed by the professor, the instruments for which were purchased largely through subscriptions started by the Committee on Italian, Spanish, and Romance Philology. This has made it possible to explain clearly, and well enough for pedagogical purposes, that part of the course illustrating what is known as Experimental Phonetics or the Laboratory Method. The second part of this course, a study of the vowel positions, is admirably shown to the students through the diagrams furnished by Professor Grandgent in his "German and English Sounds"; while the final and third division of the course is well illustrated by the use of several different methods of indicating phonetic notation. As noted in past reports of the work of this Department, it is no wonder that there are found in attendance a number of students of keen intelligence and extraordinary ability drawn from distant parts of the globe by the singular merit of this course. Professor Grandgent gives eight hours' instruction in the College and six in Radcliffe, making a total of fourteen hours per week. His work on Provençal appeared in 1905, and that on Vulgar Latin in 1907. Both are recognized by scholars as standard works. His well known merit as a teacher hampers, to a considerable extent, his productivity as a scholar.

Nevertheless, fourteen hours of teaching for the Chairman of the Department seems excessive. It is believed by your Committee that suitable relief would, on the whole, be advantageous and most welcome to the professor.

Professor Ford's work as a teacher and scholar may well be put in the same class with that of Professor Grandgent. The former has seven hours of teaching in the College and six in Radcliffe. Professor Ford's productivity as author and editor has been remarkable, both in Spanish and Italian. His "Spanish Anthology," a book of nearly four hundred pages, and his "Italian Romances of Chivalry," containing nearly seven hundred pages, are unsurpassed in their wide usefulness to advanced students of Spanish and Italian.

It is the hope of your Committee that the young men now in charge of the elementary courses in Spanish, Italian, and Romance Philology may be found to have the sterling qualities of teacher and scholar possessed in so marked a degree by their seniors. Also, in that event, that they may be permanently retained in order the more effectually to increase their own usefulness and thus contribute to the prestige of the teaching force.

GEORGE B. SHATTUCK,
J. RANDOLPH COOLIDGE, Jr.,
JAMES GEDDES, Jr.,
WILLIAM R. THAYER,
WILLIAM B. de las CASAS.

April 8, 1908.

CCVII.

REPORT OF THE COMMITTEE TO VISIT THE MEDICAL AND DENTAL SCHOOLS.

To the Board of Overseers of Harvard College: —

Of the eleven members of the Committee to visit the Medical and Dental Schools nine were present. The Acting Dean, Dr. Green, received us, on January 8, at 3 P.M. Two hours and a half were devoted to the visit. Dr. W. Sturgis Bigelow and Dr. Shepard were appointed a Sub-Committee to visit the Dental School. Their report is appended.

The heating, light, and mechanical details of the Medical School were found satisfactory. Funds are available for running the plant.

The class has increased moderately. Post-graduate and summer courses have increased in larger proportion.

The buildings are being used in many new directions. Public lectures, university courses, meetings of learned societies, are more and more frequent. The Carnegie Institute is completing a building for research on the college grounds. The new avenue of approach is being laid out. Dr. Warren is trying to secure the two corner lots for a Medical Union Club-house and for a dormitory.

Johns Hopkins, with 279 students in medicine, is the only other school requiring an A. B. for entrance. The Harvard Medical School now has 300 such students.

The Lowell Institute now offers evening collegiate or academic courses in our buildings.

DAVID W. CHEEVER, *Chairman.*

REPORT OF THE SUB-COMMITTEE ON DENTAL SCHOOL.

The new buildings are under way, in a form commensurate with the needs and importance of the School. In this fact the gentlemen connected with it are at last reaping the long delayed fruits of the patient, earnest, self-sacrificing devotion with which they have built up the institution from nothing to the position of the best

dental school in the world. This is the greatest single step in the history of the School.

The next step must be to obtain sufficient endowments to put it on a firm and enduring basis. These are urgently needed, both for professorships and for running expenses, and no more worthy object now calls for the support of all who are interested in the higher education or who have the welfare of the University at heart.

The clinics still held in the old building continue to be models of their kind.

W. S. BIGELOW, *Chairman.*

April 8, 1908.

CCVIII.

REPORT OF THE COMMITTEE ON POLITICAL ECONOMY.

To the Board of Overseers of Harvard College: —

The Committee on Political Economy met the Professors of the Department, and considers that the conditions are satisfactory.

There seems to be nothing new to report, except that arrangements have become possible through the generosity of various persons for carrying on for five years advanced business courses, such as have been under consideration for several years past.

More space is needed for conferences and books, and some plans are under consideration for relief in these matters.

For the Committee,

ARTHUR T. LYMAN, *Chairman.*

April 8, 1908.

CCIX.

REPORT OF THE COMMITTEE TO VISIT THE MUSEUM OF COMPARATIVE ZOÖLOGY.

To the Board of Overseers of Harvard College: —

In company with seven others the Chairman of the Overseers' Committee passed three hours in visiting the Museum of Comparative Zoölogy and the Zoölogical Department, on January 7, 1908. The Curator and teaching staff received them.

A large new plate glass room, or case, has been fitted to show birds nesting. A new room for birds and animals under domestication. New plate glass has been put in the animal room. A great glass case for the West Indian exhibit. The reptiles and fish are being taken out of alcohol and exhibited dry. There is a superb new model of the coral reefs of one of the Society Islands, — Bora Bora.

The Curator strongly recommends new assistants who must be skilled men, at $2,500 salaries. The Curator's report is appended. Mr. Henshaw's report on the Museum of Comparative Zoölogy is so complete that I should detract from its interest if I added more.

The Department of Zoölogy exhibits some new features of research, — a partially lighted recess to study the habits of the Ant. The effect of partial exclusion of light on the development of ova and germs is being ardently pursued in a dark basement room. The research rooms are excellent and well patronized. An ingenious research memorandum book, and a horizontal frame for tracings are new, ingenious, and useful.

A course on Systematic Entomology, supplemented by a course on Ornithology, is a pressing need. The disastrous condition of our forests and fields from the ravages of moths is a sufficient argument for the great necessity of such studies and such teaching.

Subsidiary collections for teaching should be enlarged.

The classes are practically the same in numbers and character as in the previous year.

Ten original publications were issued. There is again great need of a fund for publication.

The Curator and professors strongly favor a wider publicity for these annual reports.

DAVID W. CHEEVER, *Chairman.*

April 8, 1908.

CCX.

REPORT OF THE COMMITTEE TO VISIT THE CHEMICAL LABORATORIES.

To the Board of Overseers of Harvard College: —

Four of the six members of the Committee visited the Chemical Laboratories, on January 9, 1908. Two and one half hours were consumed. The teachers received us.

There is a slight falling off in the classes. There is no change in the buildings. Conditions are bad, but ventilation is improved by the fan, noticed as installed last year. Deficient laboratories, unsuitable or over-used lecture rooms. No adequate rooms for research.

The building, as before stated, is ill adapted to its present use. While the instructors feel that they have the sympathy of the Corporation, they realize that there is no money to help them out. If a new research building could be built, away from the street vibrations, it would so relieve Boylston Hall that routine teaching could go on there at present. Such a building should cost $100,000, and it must have an endowment to run it.

DAVID W. CHEEVER, *Chairman.*

April 8, 1908.

CCXI.

REPORT OF THE COMMITTEE ON PHILOSOPHY.

To the Board of Overseers of Harvard College: —

The chairman of your Visiting Committee for the Department of Philosophy is aware that this Committee have not for a number of years met the requirement of your Board in relation to Reports. But it may be said that the practical history of this Department has been frequently published in official speeches and reports, and is a matter of common information; and that, apart from chronicling the substantial growth thereof, little in the affairs of the Department has seemed to call for special notice. The chairman regards the Department as fundamentally important in the scheme of University teaching, and as being fortunately in the hands of officers whose reputation both as teachers and as men of thought is international. Whether inquiring into Idealism or Realism, Absolutism or Pragmatism, Rationalism or Experimentalism, he feels satisfied that most tendencies and counter-tendencies of modern and of ancient thought are ably expounded and effectively illustrated in the work and in the personal equation of the teachers in this Department. Being a layman, however, he feels that he may know more about the respective personalities and published beliefs of the philosophical professors than about their specific methods of teaching and of contact with students. And it is with the utmost diffidence that he would ever venture to estimate or criticise the effectiveness upon the students of the class-room or seminary practice of this body of college instructors. He ventures greatly to commend, however, the extension of conference-work in the courses of elementary grade; and to approve and urge the suggested establishment of an "exchange" or volunteer public philosophical lecture course from year to year in Emerson Hall. Yet in the opinion of the chairman the place of this committee is rather to further in every way, so far as in them lies, the purposes of the Faculty; to assist when possible in meeting the needs of the Department with gifts and subscriptions of money for specific expansions; but especially to arrogate to themselves the privilege of social acquaintance and good fellowship with the Department's personnel, to be themselves assisted in the walks of life by this honorable intercourse, and to bring home to these teachers whose

lines of life are of necessity peculiarly academic and absorbed some sense of the general interest and respect among men of more diffused pursuits which their depth of private research and their strength of spirit, even in this "practical" age, command. Indeed he supposes that no life can be more practical and therefore important than one which peculiarly controls and gives forth the power that still abides in single-minded wisdom.

Now, whether this be due to the bias which he naturally feels toward philosophical thinking, itself leading him to overestimate the weight which attaches to the reputation of the philosopher, it is his belief that in many American universities, including this of Harvard, the Department or School of Philosophy is and should be of an almost preponderating and certainly increasing importance among its fellow departments, and that the reason of this strength is not far to seek. Let it be conceded, at any rate, and taking the question in the largest terms, that in the standpoint of the opening century much that had seemed of paramount practical worth to men and which had occupied the fore-front of men's hopes and their antagonisms — for example, the supposedly exhaustive contradiction of the old revealed Religion and the novel empirical Science — has comparatively receded from the forum of final wisdom. It would seem that possibly some third and truer opinion of the experienced world or of life might be conceived than that, on the one hand, of Authority, or on the other of the Datum, and to which both the latter, to be intelligible, must refer. And whether it be or no that the 19th Century dispute has merely cooled, much of the fervor and the strength of mind which recently went to the attack or defence of Revelation or the Cosmic Void seems to have been released; and its energy appropriately converted, of recent years, to the Science, if you will, of the very possibility of such Disputes — that is, to the critical estimation and the creative construction of standpoints or systems called philosophical. If there be in reserve behind such critical dilemmas as that which shook the 19th Century hereabouts, a science or even a mass of reasoning and reasonable opinion to which such disputes must inevitably in the end refer for criterion and judgment, then it follows that the learned possessor of philosophical lore, and so much the more the active contributor to newer and newer criteria or standards of authoritative judgment upon life, is himself the keystone of the arch and the arbiter, in his degree and place, of every practical destiny. Wherefore, from this general point of view, the chairman feels that there is no doubt at all of the predominant value among university departments of the Depart-

ment of Philosophy. By the works and by the individualities of the teachers themselves are examples given to the world of lives devoted to the most practically important of all possible pursuits — the painstaking and wide-seeing elaboration of human truth.

The chairman therefore firmly believes that it is a good thing for a university to have put the keystone to its arch of education by the establishment and maintenance of a philosophical department to be regarded and treated as the culmination or acme of the possibilities of modern education. Nothing should be too good for such a department; no equipment too costly for its laboratories as their needs may develop; no salaries too high, be it said, for the right professors if the amounts be but appropriate to secure from each recipient his own best possible work; and no effort spared to lay before the student the assurance of the Department's advantages in the curriculum. For, inasmuch as it is only among mature men that pure philosophy can possibly present itself as of paramount importance, it is especially essential to an American college, most of whose students are comparatively immature, that special effort to assure the undergraduate of the spiritually practical value of philosophy should be emphatic and unremitting. If indeed, as above declared, the sense of mature minds is at present increasingly attracted to pure philosophy for the solution not only of the internecine antagonism between revealed Religion and Science, but of the internal dilemmas within either of the two, nevertheless it is impossible that the immature mind which barely detects the external antagonism should have better than the slightest suspicion of the dilemma within either particular alternative which his youthful bias or training has led him to adopt. A young man at the present day, so far as he has general convictions at all, can hardly escape being somewhat "religious" or somewhat "scientific" with an untrained mind; and, if he remain with mind untrained in speculation, is little likely to round out for himself a serene and many-sided maturity; for the widening of his horizon with maturity should bring with it the perplexity which only a trained philosophical attitude can in any sort raise above a pained bewilderment. From the first of his connection with the college as an undergraduate, therefore, the attention of the student should be strongly directed to the selection of elementary courses, perhaps preferably historical, in the Department of Philosophy or cognate departments. And any student with the capacity, and all students as far as their capacity will carry them, should be urged to pursue, if not the more strictly academic of the courses, at the worst those cognate courses in intellectually neighboring departments whose breadth

of standpoint constitutes them philosophical. As many of the courses in History, Economics, "Natural History," Literature, Philology, Education, Sociology, Comparative Religion, etc., are conducted in at least a quasi-philosophic spirit and directly imply the necessity of philosophical culture, the ends of a philosophical education would be partially attained by these or possibly many other selections. But the student should at all points be made to realize that in so far as these courses are broad-minded, wide-seeing, and fair in their teaching, and teach him to think for himself, they are philosophic, and rest for their collegiate warrant on Philosophy and the Department of Philosophy; a department whose range of subject, covering all human and cosmic affairs, covers all with the sole straightforward purpose of teaching the student to be wide-minded, far-seeing, and fair in a sense whose bearings can never be even approximately realized by any mind not trained and deepened by steeping itself in the thoughts of the originators and expounders of Philosophy in all ages. How far it is wise to stimulate the study of philosophy by advice concerning election of courses must in the case of each individual student be decided by the judgment of the advising instructor with regard to the youth's capacity for well-regulated study. But that the undergraduate of Sophomore or Junior year would on the average profit largely by having his attention earnestly directed toward philosophy as the crowning feature of academic education is the chairman's firm conviction. And if it be objected that much which a college man should learn nowadays would have to be crowded out by any more special application to philosophical study than is now normal among undergraduates, then the chairman is prepared to uphold the doctrine that students whose aim is general culture and whose future vocation is mercantile or non-professional should by every means be encouraged to round out their college course by from one to three years of post-graduate training in general philosophical branches, paralleling in this respect the three post-graduate years conventionally assigned to the student of a profession. In our somewhat "material" civilization the man of non-professional affairs is of large importance. And it is peculiarly unfortunate that he should ordinarily wholly lack that sort of broadening and deepening which post-graduate courses afford; and that he should on the whole prove to be of so inferior a spiritual and intellectual calibre in his daily life as contrasted with the general standard attained by the lawyer, the physician, or the educator, for whom a seven-year academic period is regarded as a matter of course. If his business or pleasure does not require post-graduate

culture, yet his citizenship* most certainly does. To the tactful urging of the undergraduate, therefore, should be added a constant exordium to remain at Harvard as a graduate student in Philosophy. And every effort of the graduate to study Philosophy, whether in hitherto neglected undergraduate courses, or in higher work, should persistently be fostered.

That this latter fostering is not at present ably done at Harvard by the conference and seminary methods now in vogue, the chairman would not for a moment imply. But the graduate material to which it can be applied, despite the fair proportion which it bears to graduates engaged in other studies, is still lamentably small. Owing not only to the calls of non-academic vocations upon the American graduate, but also perhaps to the somewhat laissez-faire policy of the college government in regard to urging a prolonged college course or a specialty such as philosophy upon students, and which is the contrary of what is heartily to be recommended, such a small proportion of the total of college students on the whole remain as graduate students in philosophy, that doubtless the efficiency of the entire university is by this single weakness seriously impaired. The adoption of the Degree with Distinction, affording great latitude for choice of studies in specialization, undoubtedly offers considerable inducement to students to take philosophical as much as other technical courses, but nevertheless can but barely open the way to a genuine vogue for philosophy among graduates or undergraduates. Of these latter very many indeed do elect an elementary philosophical course or two; especially in psychology because of its empirical standpoint; but, doubtless following some counter-inclination of inner taste or outward influence, pursue the subject no further. It is the chairman's opinion that just these men, who have proved themselves capable of passing an elementary course but lack conviction as to the value of philosophy, would be deeply benefitted if they were strongly urged, even against indications of taste or social atmosphere, to continue through the higher courses of the Department either as Juniors or Seniors, or after graduation just as in a professional or technical school and equally for the practical business of life; and

* One of the most important functions of Harvard or any other American university, especially when located near a great city, is the Americanizing of the more aspiring or well-meaning students of our hardly-assimilable foreign population. It has been pointed out by one of the professors in the Department that from among these foreigners the Hebrews seem to be strongly attracted to Philosophy and notably susceptible to its broadening influences. From this standpoint, a somewhat special power working towards a better citizenship must be assigned to the Department of Philosophy.

that the usefulness of the University, through the Department, would thereby be greatly increased. The detail or machinery of such propaganda, whether its aim be for philosophy among undergraduates or for a graduate term in philosophy, the chairman regards as not within his province to suggest; except to call attention to the fact that Freshmen and Special Students are usually advised by Faculty members as to their selection of courses; and to point out that a pro-philosophical policy among these advisers, together with some extension of this system, is all that his recommendation calls for. But he would respectfully submit that the acme of education cannot be reached unless effort is made to urge and induce the election of philosophical courses by upper-class undergraduates, and the completion of the philosophical curriculum, despite the current American habit of a briefer education, by at least one year of post-graduate study and research under the auspices of the Philosophy Department. If such a curriculum could become the usual and recognized training of a practical man of culture as graduated from our American universities, a far more adequate expression would in the next fifty years be obtainable for the spirit of the age as nowadays foreshadowed, and a far more general adherence proclaimed to standards of broad, fairminded insight and wise appreciation of the problems of our sophisticated civilization.

As evidence merely of the general growth of this Department and of its capacity to accept far more students into its material equipment, the chairman would mention the building of Emerson Hall, with its psychological laboratories and philosophical libraries, its faculty-room, its conference-room for the consultations between students and teachers, etc., etc., now in useful operation day and evening throughout the academic year. Apart from maintenance and the occasional purchase of special equipment, apparatus or books, this Hall will for years to come and for many times the present number of students be amply efficient without alteration or addition. With such a "plant," flourishing as it now is, the Department should have a still wider scope in the student material attracted to it. And the moderate and tactful propaganda of philosophy as the acme of American education and practical culture should be the highest ideal of the Government of the University.

Respectfully yours,

REGINALD C. ROBBINS,
RICHARD C. CABOT.

Approved:

RICHARD H. DANA.

I cordially concur with the above report in general and especially as to the important place which it assigns to philosophy in regard to the community as a whole, but not in its estimate of the value of philosophy courses to every individual.

JOSEPH LEE.

The difficulty involved in writing such a report on the working of any Department of the University as shall express the views of all the members of a Visiting Committee, must be apparent to anyone. The Chairman of the Committee on Philosophy has written a report which expresses his individual view completely, and perhaps only partially that of many of the other members. Because of the fact that the report is largely a discussion of the relation of the Department to the University scheme in general, as well as of the value and meaning of philosophical study, there is room for considerable diversity of view, and for that reason it is proper that each member shall have an opportunity to dwell in a separate note upon points of disagreement.

As for post-graduate study, there need hardly be difference of opinion. The Graduate School is primarily for specialization, and the widest opportunity should be given for such work, and without limitation of any kind. But the University also contains a College for the education of boys entering directly from elementary schools, of boys whose minds are for the most part untrained in methods of criticism, and whose constructive work must necessarily have been of a most elementary kind. The training of the undergraduate involves all the great problems of the higher education, and it is this work that demands and should receive the most careful thought. The College offers an opportunity for a liberal education, for such an education as shall awaken the faculties to individual development, for such as shall impart the knowledge that will best spread before the student the broadest view of human life as a preparation for future choice in special work, and, above all, for an education in such knowledge and intellectual training as shall fit him to take a foremost place in the great work involved in citizenship.

Because of the existence of the College, the degrees themselves, without need for explanation, should correspond to the distinctive work undertaken, and there should be more difference between an A.B. and an S.B. than is often measured by the elementary Latin required from the candidate for the former in the entrance examination. I do not believe in making the designation "Degrees with Distinction" the sole measure of difference. Moreover, I am not in sympathy

with the system of "advice" and "recommendation" of which there is an implied approval in the report. I accept the soundness of the elective system for undergraduates only to a very limited extent, and an active business life of nearly five-and-twenty years has constantly strengthened this view. I feel that we must some time realize that progress in civilization can be best promoted only by adding more and more to the number of our citizens who possess knowledge and understanding of what are the chief elements in civilization — a knowledge gained through systematic study of the past and present culture of mankind. What we have suffered during the past year, and are still suffering, at the hands of ignorance, is a matter of every day comment. With the growth of wealth comes ever an increasing number of men who can afford to give to their sons the best equipment possible for the active work of maturer years, and these sons should be encouraged to become a nucleus for the dissemination of a broader culture throughout the land.

Let such young men be candidates for the A.B. degree, and let other degrees be conferred upon those who specialize in natural science. But let the A.B. degree stand chiefly for compulsory systematic work in the humanities. In such a course of study, history, the fine arts, and metaphysics should have a commanding place, and with them that most important of all studies for every man who aspires to attain the finest insight into the world of thought and action — the study of Greek, and all that that great word means to cultivated men. I believe in positive knowledge, and that sound thinking must have real knowledge for a foundation. This opinion is confirmed in the experience of every day. Only upon such a foundation can develop the finest citizenship, and, after all, fine citizenship is a term that stands for all that is best and noblest in our social and political life.

I cannot agree with the statement in the report that our civilization is "somewhat materialistic"; I maintain that the world is to-day less materialistic than in any known period in the life of man. Nor can I agree with the statement that the "non-professional" man is "on the whole inferior in spiritual and intellectual calibre in his daily life as contrasted with the general standard attained by the lawyer, the physician, or the educator." The physician is a specialist trained in the technical work, and the operation of a lawyer's mind, as such, is the lowest form of effort by a trained intellect; and certainly the over-refinements of the "educator" too often merit the ridicule they receive. I cannot approve of the general assumption that the function of philosophy is to "harmonize." I know

of no "revelation," nor of any "religion" demonstrated to be "revealed."

This comment is submitted in all seriousness and respect, in the full knowledge that in such a brief statement justice can be done neither to the writer of the report nor to the subject.

W. R. WARREN.

March 11, 1908.

CCXII.

REPORT OF THE COMMITTEE ON GEOLOGY, MINERALOGY, AND PETROGRAPHY.

To the Board of Overseers of Harvard College: —

The Committee met the officers of the Department, in Cambridge, on February 29, 1908.

Many interesting specimens have been added to the Mineralogical Museum; among them an emerald crystal from South America, and an especially fine group of amethyst crystals from Brazil. Excellent results have been obtained from the assistant secured last year to arrange pamphlets and specimens. Two new lathes have been installed in the laboratories for cutting and polishing rocks for special work.

In the Geological Museum, photographs illustrating geological specimens have been arranged in the cases. This offers a means of exhibiting the Gardner photographs. Some new collection material has been added; among which is an interesting collection of Hawaiian Lavas. The teaching collections are in good condition.

The Gardner collection of photographs has been increased by the addition of slides and photographs; the most notable additions being a set of remarkable photographs of water-spouts, and some views of the eruption of Vesuvius in 1906. A large, well arranged case has been constructed to hold the collection of slides. It is planned to build a special case for the exhibition of photographs; these to be changed from time to time.

After careful investigation, the Department decided upon ordering a 100 kilogram Bosch-Omori Seismograph. This instrument has been installed, though a few adjustments are yet to be made.

During the past summer a field party in geology was sent to Montana. This party carried on an examination of the Bridger Range under Dr. Mansfield, and later visited the Crazy Mountains with Professor Wolff.

Professor Woodworth continued his connection with the New York State Geological Survey.

It is proposed to send the first "Shaler Memorial Expedition" to Brazil next summer, under the charge of Professor Woodworth,

and, if additional funds can be secured, the following winter to Patagonia. The chief subject of investigation will be glacial geology. It is also hoped that some fossil locality can be found in Patagonia. To enable the Expedition to continue researches in Patagonia next winter, probably $5,000, in addition to the income of the Shaler Fund, will be required. It is very much to be hoped that the additional funds can be secured to send the Expedition to Patagonia, as a fine field is open there for scientific discoveries.

Many important publications have been made by the members of the Department, as shown by the President's Report. Professor Ward has completed the manuscript of his new book on climate.

For the Committee,

R. L. AGASSIZ, *Chairman.*

MAY 13, 1908.

CCXIII.

REPORT OF THE COMMITTEE TO VISIT THE DIVINITY SCHOOL.

To the Board of Overseers of Harvard College: —

Your Committee to Visit the Divinity School would submit the following report.

A meeting of the Committee was held somewhat early in the academic year at which the members who were present arranged among themselves to visit in a systematic way the various departments of the School. Two months later a conference was held with the members of the Divinity Faculty at which *all* the members of the Committee and *all* the Professors and Assistant Professors of the School were present. Several matters of importance were brought out at this joint meeting.

In the first place, there is an evident deficiency in the teaching staff of the Divinity School so far as the preparation of the men for the practical work of the ministry is concerned. By that is meant the work of preaching, of conducting services of worship, and of arranging for and administering the ordinary details of parish activities. There is, for example, no Professor in the School who devotes himself primarily to Homiletics, that important branch of instruction being divided at present between three of the Professors who are busily engaged in other lines of work. No courses whatever are offered in Liturgics, or church music, or the principles of religious education. Under the general head of "Homiletics and Pastoral Care" only one full and one half-course are announced in the table of studies for the year. The disproportion is evident when it is considered that nine courses are offered in the Old Testament, five on the New Testament, and nine under the general head of theology.

This appears to constitute a somewhat serious defect of organization. It means that the purely intellectual equipment of the men is receiving much greater consideration than their practical efficiency, and that more attention is given to dead languages and ancient forms of faith than to living speech and modern expressions of work and worship. If the School can not afford to maintain a special

professor in this general department, it would seem that money might be raised to provide for a series of lectures year by year along these lines.

Moreover, in the opinion of the Committee, the students ought to be more definitely encouraged, if not indeed required, to engage in some forms of practical social or parochial work during their years in the School. Service of this kind is expected, and freely engaged in by the students of several other theological schools in this country.

In this connection the Committee notes with considerable question the tendency which exists at present to reduce the number of Friday evening preaching services in the Divinity Chapel. These services, which were formerly held throughout the entire academic year, and which were conducted by members of the Middle and Senior Classes as part of their school duties, are now confined to a few weeks during the spring term, and are conducted by members of the Senior Class alone. It is believed that this arrangement is neither wise nor beneficial, and that a return to the old order might well be established.

While the School itself is not as large at present as it often has been in the past, it is interesting to report that more men will probably receive the degree of S. T. B. at Commencement than have graduated in any one year since 1872.

In view of the arrangements which are being made for the removal of the Andover Theological School to Cambridge, where it will become affiliated with our Divinity School, it would seem to this Committee advisable that a member of the Board of the Andover Trustees should hereafter be added to our Visiting Committee. In this way the cordial relationship between the two institutions will be still further emphasized and their coöperative impulses promoted.

Respectfully submitted,

PAUL REVERE FROTHINGHAM,
JAMES DE NORMANDIE,
DANIEL MERRIMAN,
HORACE S. SEARS,
FRANCIS H. ROWLEY,
JOHN A. BELLOWS,
AUGUSTUS M. LORD,
ALBERT P. FITCH.

May 13, 1908.

CCXIV

REPORT OF THE COMMITTEE ON ENGLISH LITERATURE.

To the Board of Overseers of Harvard College: —

Your Committee to Visit the Department of English Literature report that they have held a fruitful conference with the Faculty members of the Department. There was a frank discussion of the methods, aims and needs of the Department. The recent changes of courses have been tried long enough to give satisfactory results. The plan of grouping instruction round some central figure in each epoch, instead of cutting the history of English Literature into half-century slices, has justified itself. The addition of Course 41, in which the history of English Literature is outlined from Elizabethan times to the present, is attracting a large number of the better grade of undergraduate students, with the result that, by means of this and Course 28, some 275 members of each class are getting an intelligent survey of this most important subject. The higher courses, for candidates for honors and for specializing graduate students, are sure to be well attended by the men to whose needs they cater; and this year the attendance shows no falling off. It is all the more gratifying to learn, therefore, that the general courses above mentioned are being so well resorted to by undergraduates who neither intend nor desire to become experts in English Literature. Perhaps the day may come when every Harvard bachelor of arts will possess at least as summary an acquaintance with the incomparable literature of our mother tongue as he ought to make in Course 41.

We regret that, owing to the resignation of Dr. Greenough to fill a professor's chair elsewhere, the symmetry of the instruction in the Department has been impaired. The literature of the eighteenth century is practically neglected. This ought not to be. It is as deplorable to leave a gap in the English curriculum as it would be in the study of anatomy to omit the study of one of the essential topics — such as the circulatory system or respiration. The great benefits to be derived from the evolutionist or structural study of literature cannot be attained if there are serious gaps in the instruction. We recommend, therefore, that a competent instructor in the English literature

of the eighteenth century be at once provided. We are the more ready to make this recommendation because we learn that, while the salaries of a large number of instructors are charged against the English Department, the equivalent of the full work of four full professors is diverted to teaching in other departments and to purely administrative duties. It seems only just, therefore, that the actual needs of the Department, in its effort to fulfil the end for which it exists — namely, teaching English literature — should not be passed by because so much of the energy of its personnel is borrowed for other work in the University.

ROBERT GRANT,
S. M. CROTHERS,
HAMMOND LAMONT,
W. R. THAYER.

May 13, 1908.

CCXV

REPORT OF THE COMMITTEE ON FRENCH

To the Board of Overseers of Harvard College: —

To your Visiting Committee, the courses in French seem to be well conducted by capable men, and the students thoroughly interested.

The divisions are too large for the best results; and the Department would be much strengthened by the addition of one or more Frenchmen. The coming College year will see but two Frenchmen out of eighteen teachers in French. Supposing the Collège de France had eighteen men teaching the English language, and sixteen of them were French, would not the proposition seem strange to us? It is obviously so in the case of our College.

It is also obvious that there are too many students in the larger divisions to be properly handled, and that the efficiency of the whole Department would be greater if the numbers were reduced. When it is remembered that over nine hundred students follow French courses, it will be seen that most of the divisions must be too large for personal attention and intercourse between teacher and pupils, and that such large numbers are continued at the cost of greater excellence. Smaller divisions are specially needed in the elementary courses, in order to bring the men into personal touch with their instructors, who could then keep track of the reading done by them, and find out what they were doing and thinking, and encourage them to independent outside reading, and so guide and form their taste; and Frenchmen, in their own language and with the peculiar aptitude which they possess, can do this work better than others.

The Department desires to encourage the graduate teachers, who are getting remarkably good results from their pupils, to remain at Harvard, and the Committee has followed recitations in a number of the elementary courses in order to form an opinion of the teaching there. As a result, the Committee fully endorses the wish of the Department to retain a corps of younger instructors from those who have served several years, by offering them more permanent appointments. The present appointments are for a year only, and it is proposed to extend this time for the promising teachers, in order to hold the services of men too valuable to lose, instead of allowing them to be drawn to other colleges by increase of pay and longer terms of appointment.

A Graduate School of Business Administration, a new course of two years, promises to be valuable. Included in it is a half-course in French letter-writing, open to undergraduates.

The Committee is glad to note a growing and very desirable tendency on the part of students to select courses conducted in French instead of English.

A valuable course — French 3 — is open to students who have already acquired a certain knowledge of the language without having had the opportunities for speaking it. In this course a small number of students come into personal touch with their instructor in conversation — a much needed practice which your Committee has dwelt upon repeatedly, and would like to see extended, with more Frenchmen for teachers, and with small divisions.

Respectfully submitted,

J. TEMPLEMAN COOLIDGE, Jr.,
GORDON ABBOTT,
FRANCIS McLENNAN,
THOMAS RUSSELL SULLIVAN.

December 9, 1908.

CCXVI

REPORT OF THE COMMITTEE TO VISIT THE STILLMAN INFIRMARY

To the Board of Overseers of Harvard College: —

The increase in the use of the Stillman Infirmary, as set forth in the following table, gives evidence of the value of this institution as a part of the College equipment: —

	1902–03.	1903–04.	1904–05.	1905–06.	1906–07.	1907–08.
Ward patients	134	173	264	341	368	458
Private room patients	89	117	113	91	99	83
Total number admitted . . .	223	290	377	432	467	541
Total number of hospital days	1682	1805	2631	3432	3274	4223
Daily average	7.54	6.22	7.03	7.94	7.01	7.8

The steady increase in the number of ward patients is in part due to the establishment of the annual fee ($4.00) which places the service of the Infirmary, for a specified period, without further charge, at the command of any student needing admission; in part to the better appreciation, by the poorer students, of the value of the ounce of prevention which is hereby afforded; and in part to a preference for the sociability of a ward as compared with the isolation of a private room.

With the increase in the number of ward patients the question of the advisability of making some provision of sun rooms for convalescents, on each floor, comes into consideration. The sun room, on the first floor, has been sufficiently used by patients who had ready access to it, to demonstrate its value, and the proposition to extend this structure upward, with access to it from the two wards, is respectfully submitted.

The use of the balconies in the rear of the main building for this purpose would entail passage through one of the private rooms, but

sun rooms on the end of the main building, looking south and west, could be entered through one of the ward windows, converted into a door for that purpose.

The commodious hydraulic power elevator, installed since the last report of your Committee, has been of especial service in moving patients after operations, and the operating room has proved itself to be adequate, both in space and equipment, for all demands made upon it.

The new laundry, provided at the time of the building of the contagious wards, outside of the main building, as a part of the substructure of the corridor, connecting the main building and contagious wards, is large, well lighted, and equipped with sufficient machinery, run by a 10 H. P. engine, to take care of the washing from both buildings, with full complement of patients; the soiled clothing from the contagious wards being first cared for in the disinfecting room between the contagious wards and the laundry.

The space afforded by the removal of the laundry from the main building has been well utilized by division into a large room with two beds for the male nurses, a smaller room for the assistant engineer, and two good storerooms, which were much needed for supplies. The room over the laundry, on the first floor, has been made the matron's office, thus leaving the former office, on the front of the building, free for use as a reception room for visitors.

It would be impossible to overstate the value of the contagious building, with its combination of wards and of isolation rooms for suspected cases, serving as it does the double purpose of caring for the sick and preventing the spread of contagion.

On the rear of this building, with a southern exposure, there is a fire escape, with an iron balcony on each floor, large enough to provide accommodation for two or three patients, without interfering with the legitimate purpose of the structure; by the addition of wire screening and the provision of better access from the wards, these balconies might be of service as sun rooms for convalescents.

The nursing staff of the Infirmary comprises six nurses on permanent service during the Infirmary year, others being added as occasion demands. The largest number of nurses employed at any one time was twenty-four, when there was an active demand for beds in both the main building and the contagious wards.

The direction of the work of the Infirmary has been in the hands of the Medical Visitor of the College and of the resident super-

intendent, both of whom deserve commendation for their zeal and efficiency, and for their devotion in the furtherance of the service which the Infirmary renders.

D. W. CHEEVER, M.D.,
AUGUSTUS HEMENWAY,
GEORGE B. SHATTUCK, M.D.,
JAMES A. STILLMAN,
PHILIP B. HOWARD,
J. T. G. NICHOLS, M.D.,
HERBERT B. HOWARD, M.D.,
EDMUND H. STEVENS, M.D.,
CLARENCE JOHN BLAKE, M.D., *Chairman.*

December 9, 1908.

COMMITTEES APPOINTED BY THE BOARD OF OVERSEERS

1909

ON ELECTIONS

Moorfield Storey,
James J. Storrow,
Stephen M. Weld,
William Caleb Loring,
William Rand, Jr.

ON REPORTS AND RESOLUTIONS

Winslow Warren,
Francis L. Higginson,
Louis A. Frothingham,
Frederic A. Delano,
Moses Williams,
Robert Grant,
Amory A. Lawrence.

ON DEPARTMENTS

To visit the Divinity School

Paul R. Frothingham,
James DeNormandie,
Daniel Merriman,
Horace S. Sears,
Albert P. Fitch,
Francis H. Rowley,
John A. Bellows,
Augustus M. Lord,
Charles L. Noyes.

To visit the Law School

William Caleb Loring,
James T. Mitchell,
William Rand, Jr.,
Louis D. Brandeis,
Joseph B. Warner,
George Putnam.

To visit the Medical and Dental Schools

George B. Shattuck,
J. Collins Warren,
Alexander Cochrane,
Edmund D. Codman,
William Sturgis Bigelow,
Henry H. Sprague,
Luther D. Shepard,
Henry Saltonstall Howe,
Henry P. Bowditch,
William Lambert Richardson,
Charles P. Briggs.

To visit the Bussey Institution

Carroll Dunham,
Moorfield Storey,
Walter C. Baylies,
J. Arthur Beebe,
John Lowell,
Augustin H. Parker,
William H. Ruddick,
Isaac S. Whiting,
Simon Flexner,
Daniel W. Field,
Warren A. Reed.

To visit the Library

Francis R. Appleton,
Samuel A. Green,
Charles C. Smith,
Gardiner M. Lane,
George Lee Peabody,
Clement W. Andrews,
William A. Gaston,
Charles C. Soule,
Henry Saltonstall Howe,
Edward D. Brandegee.

To visit the Observatory

Simon Newcomb,
Henry S. Huidekoper,
Robert Treat Paine,
Charles P. Bowditch,
George I. Alden,
Anna P. Draper (Mrs. Henry Draper),
George R. Agassiz,
Elihu Thomson.

To visit the Botanic Garden and Botanical Museum

Stephen M. Weld,
Frederic A. Delano,
David Pingree,
Nathaniel C. Nash,
Oliver Ames,
Elliot C. Lee,
Mary Lee Ware (Miss),
Edwin F. Atkins,
Arthur F. Estabrook,
Walter Hunnewell,
William Powell Wilson.

To visit the Gray Herbarium

Amory A. Lawrence,
George G. Kennedy,
Nathaniel T. Kidder,
Emile F. Williams,
Walter Deane,
George R. White,
John E. Thayer,
Joseph R. Leeson,
Mrs. Francis H. Peabody,
Susan Minns (Miss).

To visit the Museum of Comparative Zoölogy

J. Collins Warren,
Augustus Hemenway,
George P. Gardner,
Henry S. Hunnewell,
Louis Cabot,
Dudley L. Pickman,
Francis N. Balch,
William Brewster,
Rodolphe L. Agassiz,
John E. Thayer.

To visit the Peabody Museum

Augustus Hemenway,
George D. Markham,
Charles P. Bowditch,
Henry W. Haynes,
Jesse W. Fewkes,
Clarence J. Blake,
Clarence B. Moore,
Elliot C. Lee,
Louis J. de Milhau,
John C. Phillips.

To visit the Germanic Museum

William Endicott, Jr.,
Henry W. Putnam,
Clement S. Houghton,
Hugo Reisinger,
Otto H. Kahn,
David P. Kimball,
Edward R. Warren.

To visit the Arnold Arboretum

Stephen M. Weld,
Walter Hunnewell,
Charles E. Stratton,
Mary S. Ames (Miss),
Abby A. Bradley (Miss),
Nathan Matthews, Jr.,
John E. Thayer,
Frank G. Webster,
Charles A. Stone,
Herbert Parker.

To visit the Semitic Museum and Division of Semitic Languages and History

Jacob H. Schiff,
William Caleb Loring,
Isidor Straus,
George Wigglesworth,
William C. Endicott,
John Wells Morss,
Henry W. Peabody,
David A. Ellis,
Herbert E. Davidson.

To visit the Fogg Museum

Robert S. Peabody,
J. Randolph Coolidge, Jr.,
Frank D. Millet,
Francis Bullard,
James Loeb,
Edward W. Emerson,
Arthur Fairbanks.

To visit the Lawrence Scientific School and the Graduate School of Applied Science

Frederick P. Fish,
Henry S. Huidekoper,
Erasmus D. Leavitt,
John Lawrence,
A. Lawrence Rotch,
Charles H. Manning,
James J. Myers,
Philip Stockton,
Hammond V. Hayes,
Carroll Dunham,
Clemens Herschel.

To visit the Graduate School of Arts and Sciences

William W. Goodwin,
Stratton D. Brooks,
Gardiner M. Lane,
Edward W. Forbes,
A. Lawrence Rotch,
Charles P. Bowditch,
Owen Wister,
Edward Robinson.

To visit the Jefferson Physical Laboratory and Department of Physics

A. Lawrence Rotch,
Frederick P. Fish,
T. Jefferson Coolidge, Jr.,
Elihu Thomson,
Erasmus D. Leavitt,
Elliot C. Lee,
Samuel Hill,
Hammond V. Hayes.

To visit the Chemical Laboratory

J. Collins Warren,
Edward D. Pearce,
Clifford Richardson,
James M. Crafts,
Joseph Wharton,
Morris Loeb,
Charles H. W. Foster.

To visit the Stillman Infirmary

Clarence J. Blake,
J. Collins Warren,
Augustus Hemenway,
George B. Shattuck,
James A. Stillman,
Philip B. Howard,
John T. G. Nichols,
Herbert B. Howard,
Edmund H. Stevens.

To visit the Graduate School of Business Administration

Frederic A. Delano,
Amory A. Lawrence,
George D. Markham,
Edgar C. Felton,
Howard Elliott,
Starr J. Murphy,
John P. Morgan, Jr.,
Thomas W. Lamont,
Charles H. Jones,
A. Shuman,
Alfred A. Aiken.

ON PHYSICAL TRAINING AND ATHLETIC SPORTS

Francis L. Higginson,
Moses Williams,
Louis A. Frothingham,
Edward D. Brandegee,
Robert F. Clark,
Edwin Farnham,
Maurice H. Richardson,
William Hooper,
Clarence J. Blake,
Samuel H. Durgin.

ON THE ADMINISTRATION OF THE UNIVERSITY CHAPEL

George Wigglesworth,
George A. Gordon,
William Lawrence,
Paul R. Frothingham,
Samuel M. Crothers,
Roland W. Boyden,
William DeWitt Hyde,
Edwin L. Powell.

ON THE RELATION OF THE UNIVERSITY TO SECONDARY SCHOOLS

James J. Storrow,
Robert Grant,
Louis A. Frothingham,
John Goddard Hart,
William Bennett Munro,
Joseph Warren,
Alfred Ernest Stearns,
William Clinton Bates,
William Orr.

ON THE TREASURER'S ACCOUNTS

Stephen M. Weld,
William Endicott, Jr.,
William A. Gaston,
William C. Endicott,
Gordon Abbott,
Grafton St.L. Abbott,
Allan Forbes,
Arthur Lyman,
Richard C. Storey,
John L. Saltonstall.

FOR THE COLLEGE

ON GOVERNMENT

Moorfield Storey,
William Lawrence,
Moses Williams,
Winslow Warren,
William A. Gaston,
Gardiner M. Lane,
Charles C. Jackson.

FOR THE COURSES OF INSTRUCTION

ON INDIC PHILOLOGY

William Sturgis Bigelow, A. V. Williams Jackson, Percival Lowell, Paul Elmer More.

ON THE CLASSICS

Gardiner M. Lane, Babson S. Ladd, Henry B. Chapin,
William W. Goodwin, James Loeb, Prentiss Cummings,
W. Amory Gardner, William K. Richardson.

ON ENGLISH LITERATURE

Robert Grant, Samuel M. Crothers, Hammond Lamont,
William R. Thayer, Owen Wister.

ON COMPOSITION AND RHETORIC

Moorfield Storey, George R. Nutter, Edward S. Martin,
George A. Gordon, John T. Morse, Jr.

ON GERMAN

Frederick P. Fish, George Francis Arnold, James Monroe Olmstead.

ON FRENCH

J. Templeman Coolidge, Jr., T. Russell Sullivan, Gordon Abbott,
Francis McLennan.

ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY

George B. Shattuck, J. Randolph Coolidge, Jr., James Geddes, Jr.,
William R. Thayer, William B. de las Casas.

ON HISTORY

James Ford Rhodes, John Noble, William F. Wharton,
William R. Thayer, Henry H. Edes, Henry C. Lea.

ON GOVERNMENT

Frederick P. Fish, James T. Mitchell, Charles S. Hamlin,
Samuel W. McCall, Augustus E. Willson.

ON POLITICAL ECONOMY

Frederic A. Delano, John F. Moors, Charles S. Fairchild,
William Endicott, Jr., Charles G. Washburn.

ON PHILOSOPHY

Reginald C. Robbins, Richard C. Cabot, William R. Warren,
George B. Dorr, Richard H. Dana, Joseph Lee.

ON EDUCATION

James J. Storrow, John F. Moors, Grafton D. Cushing,
George D. Markham, William Taggard Piper, Frederic P. Cabot.

ON FINE ARTS AND ARCHITECTURE

Robert S. Peabody, Frederic P. Vinton, Daniel H. Burnham,
C. Howard Walker, Edmund C. Tarbell, Holker Abbott,
Charles F. McKim.

ON MUSIC

Arthur Foote, George A. Burdett, Percy L. Atherton,
George D. Markham, Horatio A. Lamb, Owen Wister.

ON MATHEMATICS

William Lowell Putnam, Simon Newcomb, Philip Stockton.

ON ENGINEERING

Frederick P. Fish, James J. Storrow, Charles C. Schneider,
Joseph R. Worcester, Charles H. Manning, Edwin W. Rice, Jr.,
Edmund A. Stanley Clarke, Clemens Herschel, Frederic W. Taylor.

ON BOTANY

Nathaniel C. Nash, George G. Kennedy, Walter Deane,
Edward L. Rand.

ON ZOÖLOGY

David W. Cheever, George P. Gardner, Dudley L. Pickman,
Augustus Hemenway, Henry S. Hunnewell, Francis N. Balch,
William Brewster, John E. Thayer, Rodolphe L. Agassiz,
John C. Phillips.

ON GEOLOGY, MINERALOGY, AND PETROGRAPHY

Rodolphe L. Agassiz, George P. Gardner, Raphael Pumpelly,
William Sturgis Bigelow, William E. C. Eustis.

ON MINING AND METALLURGY

John Hays Hammond, Quincy A. Shaw, Hennen Jennings,
Charles P. Perin, Frank H. Taylor, Benjamin B. Thayer,
R. Alexander F. Penrose, Jr., Edgar C. Felton, Albert F. Holden.

ON FORESTRY

Charles Francis Adams, James W. Brooks, George C. Cutler,
John S. Ames, Frederick J. Caulkins, Henry James, 2d,
James S. Russell, John E. Thayer, Frederick L. Olmsted, Jr.

CCXVII

REPORT OF THE COMMITTEE ON MUSIC

To the Board of Overseers of Harvard College: —

Since the resignation of Professor Converse the teaching force of the Department of Music has been practically reduced to two persons, the Austin Teaching Fellow in Music, Mr. Hurlin, also giving some assistance in two courses. Next year the half-courses 2*a*, 2*b*, 4*a*, 5, and the course 7 will be added to what is offered this year, as Professor Spalding will have returned. We feel that the teaching force will be inadequate to meet these demands.

During Professor Spalding's absence Mr. Edward Burlingame Hill has been one of the instructors, and we recommend that, on Professor Spalding's return, Mr. Hill be retained in the Department.

Respectfully yours,

ARTHUR FOOTE, *Chairman.*

January 19, 1909.

CCXVIII

REPORT OF THE COMMITTEE TO VISIT THE CHEMICAL LABORATORY

To the Board of Overseers of Harvard College: —

Your Committee beg leave to report that they visited the Chemical Laboratory on Tuesday, March 9th, at 11 A.M., and were received by Professors Jackson, Sanger, Richards, Torrey and Baxter, and Dr. Henderson. At the opening of the meeting an expression of deep regret at the recent death of Dr. Wolcott Gibbs, Professor Emeritus and distinguished chemist, was recorded. After the reading of reports on the present condition of the building, and some discussion, the Committee were shown over the laboratories.

The condition of the laboratories in Boylston Hall has been so fully set forth in previous reports that it seems now hardly worth while to repeat in full the criticisms as to their condition, which have been so repeatedly made. It may be, however, of advantage on this occasion to refer to one or two points of pressing importance. The needs of those desiring to study chemistry at this University may be divided into two classes: first, the needs of the undergraduates, and, second, the needs of those conducting research.

So far as the undergraduates may be concerned, the most pressing necessity at the present time is for the better accommodation of students in qualitative analysis. The space assigned to this work has been so inadequate that additional accommodations have been found for the students in the west wing and basement of Dane Hall. For those who are working in what is now termed Chemistry 1, there is such imperfect accommodation that about half of the students have been forced to carry on work in the unsanitary cellar, now called Room A. There is no space anywhere for laboratory instruction in elementary organic or in technical chemistry.

Turning now to the needs for research: For organic research the accommodation is fair, but not ample or comfortable. For inorganic and physico-chemical research the facilities are very bad, and for technical research there are no facilities at all, nor is agricultural, sanitary, or biological chemistry at all provided for in Cambridge.

In precise investigation of atomic weights, Harvard probably leads the world. Such work demands well ventilated rooms, free from dust and noxious vapors of all kinds, — for these may ruin the

purity of the substance to which months of care have been devoted. Researches in physico-chemistry need rooms of constant temperature, free from vibrations and changes in electrical field.

Professor Richards writes: "My own work, which lies in the field of inorganic and physical chemistry, is so badly provided for that at times I have been really desperate."

The lecture rooms, which for the most part were designed at the time of the first occupancy of Boylston Hall in 1857, are now not only inadequate for the number of students to be accommodated, but are lacking in ventilation, and are too few for the proper preparation of experimental lectures.

One of the most important needs at the present time is a better provision for the administration of laboratory and store-room, — a very important feature in the economical carrying on of a well-conducted laboratory.

When the present building was built, there were about one hundred students in the required lecture and recitation course, but few laboratory students. The number of the latter steadily increased from time to time, and the other departments of the University which also found room in Boylston Hall were gradually crowded out, until in 1900 every nook and corner in the building which could be utilized had been exhausted. The consequence was that when over six hundred men applied for desks that year there was a waiting list of forty men. This continued for several years, and the University was in the position of not being able to make good its announcements concerning chemistry. With this overcrowding, a steady deterioration has taken place in the equipment of the building, and the result is that many men are now deterred from taking the elementary course in chemistry on account of the known conditions of the laboratory. It is also probable that many students do not go on with advanced work on account of the unfavorable conditions under which they have to work.

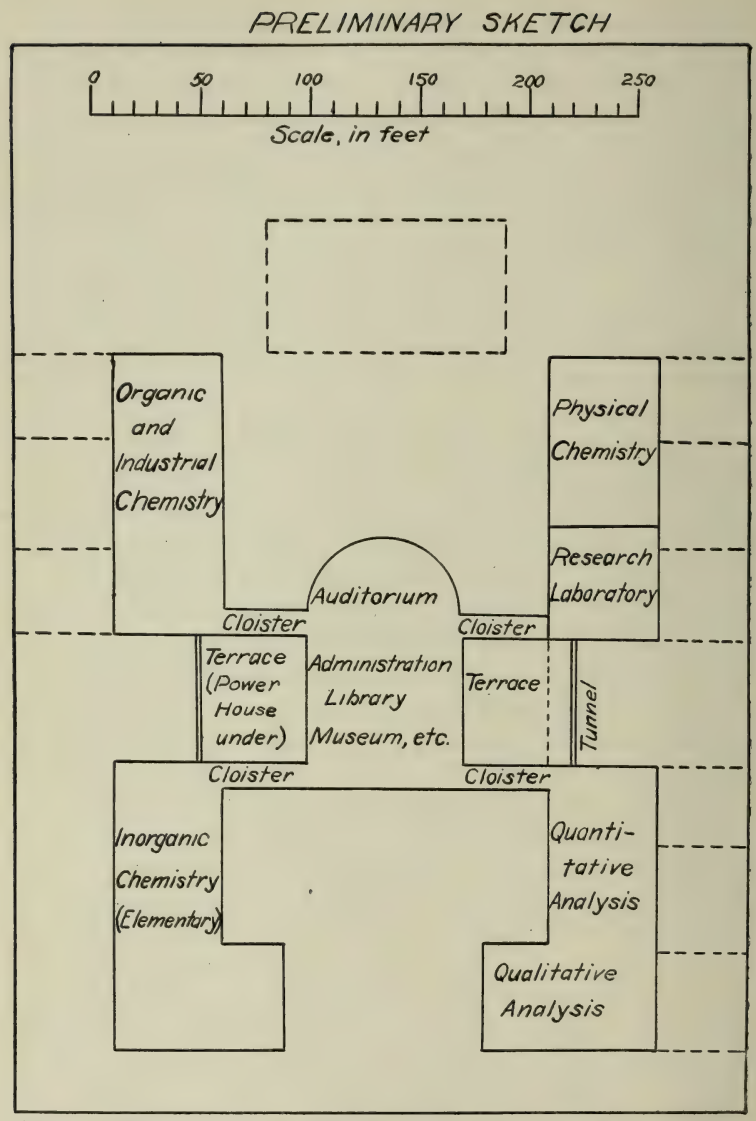
Professor Sanger states in one of his annual reports to the President: "When the majority of students who elect our courses must do laboratory work and listen to lectures in poorly adapted and badly ventilated rooms, it would not be strange if a knowledge of these conditions should deter the student from electing courses in chemistry."

It has been suggested that the present building should be entirely refitted internally, but its arrangement at the present time is so entirely unadapted to alterations of any kind that it would be necessary to tear out the whole interior of the building, and even then

it is not probable that a satisfactory arrangement of a new set of laboratories and lecture rooms on a modern basis could be arranged within its four walls, as careful measurements of Boylston Hall show that the available space within the walls would not be adequate for the needs of the department if the building were to be remodeled. A further use of Dane Hall, aside from the obvious inconvenience of two separated buildings, would not give sufficient room for expansion. In short, any remodeling or enlarging of present quarters would be but a makeshift. For this reason it was borne home strongly to the members of the Committee, as it has been for a long time to the members of the teaching staff, that these needs can be met in an adequate way only by the construction of a number of new buildings, — the separate buildings being devoted to different branches of chemistry, and placed not far apart, to be connected with each other by a central Administration Building. The latter might contain also the chief lecture rooms, a chemical museum, as well as a library, and other facilities to be used in common by all; separate buildings, as has been stated, to be devoted to the different branches of chemistry. One could be devoted to organic and industrial chemistry; a second to inorganic chemistry; a third to physical chemistry, and a fourth to quantitative and qualitative analyses. Portions of one or more of these buildings could be set aside as research laboratories, of their respective kinds. In this way provision would advantageously be made for the adequate separation of work injurious to other parts, either because of noise, vibration or noxious gases; on the other hand, connection with the central Administration Building would promote unity of interest.

A preliminary sketch of one of several ways in which these buildings might be arranged is shown on page 1162. Such a scheme of a group of buildings devoted to chemistry would necessarily demand considerable space of ground, but the Committee understand that land for this purpose is available in Cambridge in a situation which would not only be well adapted to the purposes of the buildings erected upon it but would enable them to become an ornamental addition to the various groups of buildings now in the University grounds.

Such a proposed radical departure of the administration of the Department of Chemistry would undoubtedly involve a large expenditure, but when we consider the importance of the subject and the character of the teachers and investigators who are interested in this department of science, we do not hesitate to recommend most urgently that steps shall be taken in order that a beginning may be made to work out an entirely new foundation for this department.



THE PROPOSED CHEMICAL LABORATORIES
OF HARVARD UNIVERSITY

With the immense development of the various departments of science which has taken place since the chemical department was first established on its present basis, attention has been so acutely drawn to other fields of labor that the public has failed to grasp the important role which has been played by pure chemistry in almost all of the departments of industry and science which have contributed towards the advancement of the material prosperity of mankind. It seems proper, therefore, to call attention at this time to the rôle which chemistry has played in this great awakening of science in its application to humanity.

In the first place, in this age of steel, much depends upon the chemical manufacture of the various kinds of hardened iron. As iron does not occur in commercial quantities in a native state, the preparation of all the enormous quantity which is used depends entirely upon making a sufficiently pure product by a method which avoids unnecessary waste. Both the elaboration of the method and the determination of the purity of the material can be accomplished only by trained chemists; moreover, the protection of the finished product from the chemical change of rusting lies also in the same hands. When one takes into consideration the fact that steel serves not only a chief rôle in the construction of ships, bridges, and buildings, but also is concerned in the manufacture of almost every article which we use, because of the need of steel tools of suitable quality, one can see how great an indirect part chemistry plays in every act of our life. Indeed, all the building materials of the future, such as the composition of concrete, and the manufacture of glass and of pottery, present at the present time chemical problems of enormous interest.

Another great industry, the soda industry, is, of course, wholly chemical, and so is the soap industry, which depends upon it. Before chemists had shown the world how alkalies could be made on a large scale, these all important substances were to be obtained only from the ashes of wood and seaweed. The consequence was that both soap and glass were very expensive, and the result to the growth of civilization was lamentable. The cleanliness, and therefore the health, of the world is due to Leblanc, and since then to Solvay, two chemists who have made soap cheap enough to replace the mediaeval perfumes which were made to conceal the dirt.

The two great departments of applied biological chemistry are medicine and agriculture, and it is only now that systematic and hopeful attempts are being made to apply chemical knowledge broadly in these fields. Already there can be no doubt that progress

in this direction in the next few decades is to be enormous. It has been arrested during the last five or six decades because pure chemistry, after developing for years in connection with medicine and agriculture, found itself at a point where it had to turn to a systematic development of its whole field. Now, however, this development has gone on so far that much can be done with our present knowledge of organic chemistry and physical chemistry, and much more will be possible in the future if this development of pure chemistry goes on with the same acceleration as in the past.

For the welfare of the human race, it is essential that this acceleration should continue, and there is no loftier public service than advancing these activities. The advantageous results of dealing scientifically with such subjects are to be found everywhere in health and comfort, in relative freedom from pain, in increased immunity to disease, so far as medicine is concerned; in greatly lessened labor and enormously increased efficiency of labor, resulting in wonderful increase of productivity, and general economic amelioration for scientific agriculture.

In the industries in which fermentation is a problem to be dealt with, individual chemical research plays an important rôle, and it was while pursuing such investigations that Pasteur discovered the great role of bacteria, revolutionizing at the same time the whole domain of another department of science, — medicine.

In agriculture we find a striking example of the value of pure science, for here it was the investigations and experiments of Liebig which clarified and simplified the whole subject.

The fertility of the earth depends upon the chemical manures, and it is calculated that in thirty years the present source of nitrogen (Chile saltpetre) will be exhausted. The loss of nitrogen in combustion, and otherwise in civilization, is a permanent one. Chemical means exist for getting it back from the air. With power from electricity producing a high temperature, we can get nitric acid from the air, so that the danger of giving up intensive agriculture from lack of nitrogenous manure has been averted by chemistry.

The chief product of farming is starch, which forms the bulk of all edible vegetables, for that is the chief food of man, and in a larger degree it is the chief food of the herbivorous domestic animals. The amount of starch which is consumed as food by man and the domestic animals in the United States alone cannot be far below fifty million tons per year. In addition to this enormous use of the substance, great quantities of it are being converted into glucose and into alcohol, and the use of starch for these purposes

as our scientific technology develops in this direction, promises to be far greater than at present. We may, indeed, expect that glucose will largely replace cane sugar, and we are now assured from our present improved devices that alcohol may be, at need, substituted for coal and the products of petroleum in the production of heat and power. The technology, then, of an inconspicuous substance, if we may use the term, such as starch, becomes at once one of the greatest problems in the whole field of economics, the proper treatment of which depends upon the past achievements in the field of pure chemistry and progress to come in that field.

The development of paper from wood pulp is now a source of great danger to our forests. The question of getting pulp from straw and cornstalks for this purpose becomes, therefore, an important one, in the solution of which the prosperity of the country is intimately involved.

The improvements of our textile fabrics, such as the manufacture of artificial silk, have great possibilities for improvement.

All the new processes for reproducing photographic pictures are largely chemical problems, as is also coinage, chemical assaying and the whole domain of metallurgy.

Coming now to the medical side of the question, we see at once that the science of nutrition and the value of every different kind of food in the maintenance of health, and its adaptation to disease, are all chemical problems, which are becoming topics of increasing interest to those who are assisting actively in the advance of practical medicine. The actual control of the food supply is largely chemical, and the pure food laws can be enforced only through chemistry.

Of the many applications of chemistry to medicine, the problem of immunity in its broadest sense is perhaps one of the most important, and then we have also the problem regarding those diseases which are in the largest sense systemic, — like diabetes, gout, and some of the atrophies, and even senility itself. It is possible even that the question of the origin of cancer, one of the few diseases which has thus far baffled research, and which so far as we know is probably not of microbic origin, may turn out eventually to be a purely chemical problem.

The whole domain of hygiene and preventive or state medicine is a field of investigation which only those well trained in chemical research can deal with intelligently. A chemical training is, therefore, an essential part of the education of the health officer, who plays so increasingly important a rôle in the economy of our modern civilization.

It is hardly necessary to maintain at length here the boon to humanity which such chemical substances as ether, chloroform, and cocaine have been, and the important rôle which all the coal tar products have played in pharmacology.

The law against arsenic in wall-papers was the result of a movement which was started from the University laboratory, being put on a scientific basis by Professor Sanger's proof that arsenical wall-papers were injurious, by analyses of the urine of patients. The debt which surgery owes to this University for the part it played in the introduction of ether as an anesthetic in surgical operations should not be forgotten.

The structure of many physiologically active substances has now been made out, and by making allied substances with similar structure, by an experimental transposition of molecules in the hands of trained observers, many new and equally valuable drugs may be obtained. This scientific search for medicine, which is still in its infancy, is sure of bringing great results in the future.

Finally, from a purely business point of view, the encouragement of chemical research is of the highest importance. As competition increases, the successful man will more and more be the one who lets nothing go to waste, but adopts the most efficient processes and devises new ones still more efficient; who works up his by-products into some useful, and, therefore, valuable substances, who economizes energy, whether this energy comes from coal or water power, or human labor. The field is too large and chemical laws too complex to have the results come accidentally. They can be accomplished only by a systematic investigation of the whole field of chemistry. Only upon the study of pure chemistry and the laws which underlie it, can be built the practice of chemical technology, just as our whole modern technique of electricity was built upon the purely scientific experiments of Faraday, or the modern system of wireless telegraphy was built upon the calculations of Clerk Maxwell, and the scientific experiments of Hertz. An improvement of a chemical process which betters the yield by 5% may mean $10,000,000 a year to a single large corporation in a time not far distant, if not even to-day.* Colossal fortunes have already been made in this way. It is slowly creeping into the minds of business men and manufacturers, that a trained chemist can improve an output or effect economies, and that something more than a mere analyst is necessary in a manufacturing concern. But how many

* The gross income of the Steel Corporation in 1907 was $757,000,000; its net income available for sinking funds, interest, dividends, etc., was $160,000,000.

persons understand that chemistry is essential in most plans for the social uplifting of the people?

In Europe it is a truism that well endowed and active laboratories of pure chemistry are a source of wealth to the community, and nothing is more striking than the close coöperation between the German chemical professors and the "works-chemists" of the great German chemical industries. This coöperation it is which has put the German chemical industry at the head, with no other country a respectable second. England is fast losing her supremacy in manufacturing where chemistry plays a part, and the success of the Germans and the backwardness of the English is to be attributed to the difference of the educational systems of the two countries, in the large supply of highly educated chemists in Germany, and the smaller supply and want of their employment in England. In a very large degree, the commercial prosperity of the German empire is dependent upon this supremacy. The German emperor himself has said this, and it is generally believed in German universities. The Badische Anilin und Soda Fabrik employ more than one hundred men on pure research, and other corporations in proportion, not only for purely chemical work, but for the manufacture of iron and steel, and in other kinds of industry.

There are two chemical plants in Germany, each as big as the General Electric Company's plant, whose works are so correlated that the waste products of one serve as the valuable products for the other. From one to two hundred doctors of philosophy in chemistry are employed in some of these great establishments.

The importance of chemistry on the continent of Europe is attested in a remarkable manner by the expenditures of the several governments for the equipment and maintenance of the chemical laboratories of their universities and schools of technology. In Berlin, for example, the cost of a laboratory built about twelve years ago for Fischer, was 1,316,000 marks, with 64,000 marks more for a connected dwelling house for the director. There are in Berlin, in addition to this laboratory, laboratories of inorganic chemistry and of physical chemistry for the university, and a fine large chemical laboratory for the technical school. All these laboratories together probably cost a good deal more than 3,000,000 marks.

Strassburg is a university with about one-third as many teachers and students of chemistry as Harvard. The Strassburg laboratory is devoted to organic and inorganic chemistry exclusively. To build it to-day in Cambridge would cost about $300,000. Allowing for difference in cost of construction, either of these cases indicates that

the Prussian government would, in a case like Harvard's, devote about $1,000,000 to the construction of chemical laboratories.

Not less significant are the yearly budgets of some of the European universities. In Berlin the chemical laboratory above mentioned has from the government 80,000 marks a year for running expenses, the physico-chemical laboratory 20,000 marks. These sums are in no part derived from tuition fees, but are direct subsidies. Together with the similar appropriations for the other chemical laboratories of the university and the technical school they certainly exceed 150,000 marks yearly.*

In Berlin the physical laboratory receives 33,000 marks a year. The university library has 121,000 marks, which is not more than three-fourths the sum devoted to all the chemical laboratories of the university, and the technical school, and only 50% more than the sum devoted to one of them.

In Leipsic the three chemical laboratories have 80,000 marks a year for running expenses, the physical laboratory only about 27,000 marks.

In Strassburg the chemical laboratory has 34,000 marks a year, the physical laboratory 14,000 marks; the library, which serves both university and province (Alsace-Lorraine), has about 72,000 marks. If one assigns one-half of this library budget to the university and one-half to the province, it appears that a chemical laboratory which is dealing with only two of the important divisions of chemistry and has but one professor ordinarius, and but one professor extraordinarius, receives nearly as much money as the university library for running expenses.

In Zurich the university chemical laboratory is voted f 24,800 a year. This sum is approximately equal to the total yearly appropriations for the laboratories of physics, botany, zoölogy, anatomy, physiology, and pathology together (f 25,600).

These facts indicate that a German or Swiss government would, in a case like Harvard's, devote about $25,000 a year to the maintenance of chemical laboratories. These data, together with the confirmatory facts, also indicate that in Germany and Switzerland the chemical laboratories are regarded as of equal importance with the university library, about three times as important as physical laboratories, and as equalling in importance the institutes of six other sciences taken together.

* The Harvard laboratory has from the Corporation approximately $900 yearly for running expenses. Other sources of income are similar in the two countries.

Speakers at meetings in America which have any bearing on chemistry intimate that we are beginning to profit by this lesson, and are using trained scientific knowledge in ever increasing proportion, and that the results can be already seen.

The General Electric Company employs from 20 to 25 physicists and chemists, and the Eastern Kodak Company, which is highly successful, employs 3 to 4 research chemists. The Pennsylvania Railroad have a large staff of chemists assisting their research chemist in studying the qualities of steel.

If we admit as a principle that the funds should be distributed to each department of the University in due proportion, then we think that the claims of the Department of Chemistry should stand very high. Harvard has always been a leader in university education in this country, and it is still aiming strenuously to maintain that position. Is it not wise, therefore, in planning the education of her students, to give due encouragement to the distinguished staff which is now laboring under exceeding difficulties to maintain a well-earned supremacy in this department?

Is it not also advisable that Harvard should recognize the new movement of industrial chemistry? Should she not be a leader in this line of research, and come thus in close touch with the wants of the people by showing them how to make production more effective? By following the policy already adopted by some of the state universities and giving instruction in agricultural chemistry, it is not too wild a dream to hope that the abandoned farms of New England may be blossoming like gardens in the next fifty years.

Your Committee do not, therefore, hesitate to endorse the plan already outlined by this department in the accompanying sketch. It is estimated that buildings of the character contemplated can be built for $500,000; a further sum of $500,000 would be needed for the proper endowment of such a plan. This is in itself doubtless a large sum, but small in comparison with amounts expended on many industrial projects.

Although it may not be possible to carry out this scheme at once on the scale contemplated, the establishment of a research laboratory as a beginning would be of great benefit, if the project could be carried out on a consistent plan, which should be adopted at the outset. The estimates for such a laboratory have been made, and in round numbers would amount to about $50,000 for building and installation. A further sum of $50,000 would be needed for endowment.

The Committee would, therefore, urge strongly that an attempt be made at once to obtain $100,000 for this purpose, and thus make a beginning of the development of this department on a scale suited to its needs at the present time.

The last century has been a century of power, by the perfection of machinery and the development of electricity. The coming century promises to be a chemical century. Should Harvard, if all this be true, be content until it has obtained the best chemical laboratory in the world?

J. COLLINS WARREN,
CLIFFORD RICHARDSON,
JAMES M. CRAFTS,
MORRIS LOEB.

March 27, 1909.

CCXIX

REPORT OF THE COMMITTEE TO VISIT THE MEDICAL AND DENTAL SCHOOLS

To the Board of Overseers of Harvard College: —

Your Committee met at the Medical School on Longwood Avenue, and, accompanied by the Dean and other officers of the School, went over the buildings, visiting the museum, the library and reading room, the lecture rooms, the laboratories, and the heating apparatus. The impression thus received was a very favorable one. Your Committees have already more than once expressed their appreciation of the new buildings; further time and use simply serve to prove their merits, which are great, and the defects revealed are in comparison few and small. In addition some of the members of the Committee have attended some of the clinics and talked with various instructors.

The changes in the last three or four years, from the standard of admission through the whole curriculum to the graduation, have been so numerous and so considerable that a period of comparative tranquillity, of consolidation, of testing, of revision possibly, would seem to be indicated and desirable. During such a period an attitude of sympathetic interest is probably the most serviceable on the part of your Committee.

As a reminder, however, that few things, however good, are really complete, attention is again called to the importance of securing the land on either side of Avenue Louis Pasteur opposite the Medical School. There exist two lots, one of $3\frac{1}{2}$ acres and one of $1\frac{1}{2}$ acres. By obtaining an option on these parcels of land the School would be enabled to wait until the moment arrived when some practical plan could be devised by which a dormitory could be built on one side of the avenue, and a club house and restaurant could be provided for the students on the other. A hall capable of containing one thousand persons would be a most valuable addition to the School, and could be made a feature of the club house. It is needed especially for the popular lectures which are now provided by the

Faculty and for the numerous scientific meetings which find the Medical School so convenient a resort.

GEORGE B. SHATTUCK, *Chairman*,
J. COLLINS WARREN,
ALEXANDER COCHRANE,
E. D. CODMAN,
HENRY H. SPRAGUE,
W. S. BIGELOW,
H. P. BOWDITCH,
L. D. SHEPARD,
HENRY S. HOWE,
W. L. RICHARDSON,
CHARLES P. BRIGGS.

April 14, 1909.

REPORT OF THE SUB-COMMITTEE ON THE DENTAL SCHOOL

We have recently visited the new Dental School now in process of construction.

The building at present shows but the outer walls and the floors, but one is at once impressed by the advantages of its location at the corner of two streets, with unobstructed light on all four sides, a step from the Huntington Avenue cars.

We know the difficulties that have attended the teaching of dentistry in the old school because of inadequate, not to say antiquated, building and equipment. We know, too, the plans for the installation of the best appliances in the new building. Knowing this, it would seem that the Harvard Dental School has at last a chance to retain, if not to improve, its position.

When one considers the efforts of the few who have spent their time and energy to make this possible, one can but express admiration.

L. D. SHEPARD,
CHARLES P. BRIGGS.

CCXX

REPORT OF THE COMMITTEE ON ITALIAN, SPANISH, AND ROMANCE PHILOLOGY

To the Board of Overseers of Harvard College: —

Your Committee has met together, and its members have attended some of the exercises and talked with the head of this course of instruction and with other teachers in the course.

In Italian there are four courses given this year as against five last year, and a total of 69 students as against 76 last year. The reason of the falling off seems to be due partly to the total fewer students in the Freshman and Sophomore classes and partly to the new requirement of an extra fee for extra courses, which has considerably reduced the total number of elections in the College. Students seem to feel more obliged to aim directly at what is likely to prove most useful. Italian is emphatically a culture study, and we regret to see any decline in the number of students taking it. Though the number has decreased, the quality of the students taking Italian seems to have improved.

On the other hand, there are 165 students taking Spanish this year as against 135 last year. But last year only two courses were given, whereas this year there are six. Two new courses, or rather half-courses, have been added, one on Spanish composition and the other on Spanish correspondence. These courses are paid for by the Graduate School of Business Administration, and are conducted by Senor Hurtado, a Mexican. The good attendance upon Spanish courses as a whole illustrates here, as elsewhere in educational institutions, the practical point of view taken by students generally. Spanish is distinctly preferred to Italian on utilitarian grounds.

A welcome and interesting addition to the instruction in Spanish was an evening lecture, open to the public, on the Spanish ballad by Professor Menendez de Pidal of the University of Madrid.

More courses are given in Romance Philology this year than last, and there are 60 students compared with 39 last year. On the whole, numerically considered, the Romance Philology division is strong. The influence of the general trend of studies in the University has been, not unfrequently, said to be towards the philo-

logical rather than towards the humanitarian or purely literary. The fact that in the four courses given in Romance Philology there are 60 students, and in a subject so eminently one of literary culture as Italian there are in the four courses there but 69, goes far towards supporting the above statement.

Your Committee learns with regret of the loss to Clark University, Worcester, of Mr. Churchman, one of the best of the younger instructors. Such changes, though regrettable, are an inevitable result of restricted financial resources.

Your Committee mentions with pleasure the publication in Heath's Modern Language Series of Dante's Divine Comedy, edited and annotated by Professor C. H. Grandgent; and also the appearance of a volume of Spanish Classical and Modern Texts, under the general editorship of Professor Ford.

Your Committee desires to suggest that the reputation of the University and an appreciation of the work being done in this course of instruction warrant a change in the title under which its courses are now grouped in the Official Register from "Department of French and other Romance Languages and Literatures" to one which will specifically mention Spanish and Italian and perhaps Portuguese, as well as French. Your Committee also ventures to hope that the time may soon come when a building will be provided for the Department with rooms for each section, so that there may be gathered and made available, for example, in the Spanish Section, a comprehensive collection of books and papers and of whatever will illustrate historically and contemporaneously the art, architecture and other manifestation of the life and activities of Spanish speaking people, and make their language and literature real and comprehensible to students.

GEORGE B. SHATTUCK, *Chairman*,
J. RANDOLPH COOLIDGE, JR.,
JAMES GEDDES, JR.,
WILLIAM R. THAYER,
WILLIAM B. DE LAS CASAS.

APRIL 14, 1909.

CCXXI

REPORT OF THE COMMITTEE TO VISIT THE GRAY HERBARIUM

To the Board of Overseers of Harvard College: —

Your Committee appointed to visit the Gray Herbarium has, during the last three years, held each year at least one meeting at the Herbarium. Whenever the interests of the Herbarium appeared to require them, other meetings of the Committee have been held. Furthermore, several members of the Committee have from time to time visited the Herbarium informally, and all have had ample opportunities accorded them of gaining insight into the nature, development, value, and needs of the establishment.

The most noteworthy event in the history of the Gray Herbarium during recent years has been the payment of the large legacy left to the establishment by the late Mrs. W. B. Potter, formerly a member of this Committee. The gift, amounting to $188,400, augments the previous endowment of the Gray Herbarium to a point where the income for the first time is sufficient to cover what may be fairly regarded as the normal needs of the establishment. It assures the permanence and continued usefulness of the Herbarium, will cover such purchases of specimens and books as are essential for the normal development of the collections, and will permit the continuous employment of a small but highly trained staff of scientific investigators. It will not, however, be sufficient to cover any unusual expenses, such as those of scientific exploration or any large technical publication. Nor will it provide for the present pressing need of enlarged and fireproof quarters for the Herbarium.

In estimating the needs of the Gray Herbarium it is to be borne in mind that it is not to ranked with similar collections at other colleges, such as Yale, Princeton, Amherst, etc. Through its long and careful development it has become, like the Harvard Observatory or the Agassiz and Peabody Museums, a publishing scientific establishment of international importance in its field. Its chief competitors are in nearly all cases establishments like the herbaria of the New York Botanical Garden, the Department of Agriculture, and the Missouri Botanical Garden in America, as well as the Royal Botanical Gardens at Kew, Berlin, Vienna, etc., abroad — all of which enjoy through large endowment, or by municipal or governmental aid, superior incomes.

It is believed that there is reason to be gratified by the large and steady growth of the permanent collections of the Herbarium and by the considerable and very carefully directed increase in its highly important departmental library. The scientific output of the staff appears also to be in every way creditable both in extent and technical excellence. Noteworthy among the recent publications has been the new and almost wholly rewritten edition of Gray's Manual of Botany, being a flora of the northeastern and central states and of adjacent Canada. This new and copiously illustrated edition is the result of some ten years' work by Professors Robinson and Fernald, who appear to the committee to have succeeded admirably in giving American botany what has long been needed, namely, a flora embodying, with due conservatism on all disputed points, the most recent views upon the classification, affinities, ranges, and nomenclature of our plants. It is safe to say that Gray's Manual, in past editions, has exercised greater influence than any other work upon American botany, and it is a source of much gratification to see it brought thoroughly to date and given a new lease of life. The editors are to be particularly congratulated upon their patient and effective condensation of material. They have included many hundred plants not treated in previous editions, have introduced a large number of exceedingly helpful keys, have inserted nearly a thousand new illustrations, and still have succeeded in keeping the whole work within the bounds of a handy manual, in a single volume, and as convenient for use in the field as in herbarium or laboratory. The publication, though making no concession of scientific accuracy, is popular in form and wording, in this way gaining much of its value, since being extensively used by students and amateurs through the country it leads many to send to the Gray Herbarium specimens of particular interest or difficulty, an important means of building up the permanent collections of the establishment.

In conjunction with this continued activity upon the region covered by Gray's Manual the staff of the Herbarium is carrying on no small amount of scientific work upon plants of other regions. For many years its work and technical publication upon the flora of Mexico have been considerable. Mr. Pringle, distinguished for his success as a botanical explorer, continues to make for the Gray Herbarium annual trips to the less known portions of Mexico, journeys upon which he never fails to secure a considerable number of new or otherwise noteworthy plants. For several years Professor Fernald has directed his own field work chiefly to eastern Quebec, where, especially in the mountains of Gaspé Peninsula, he has discovered

many plants (in part new to science) which show a hitherto unsuspected relation between the flora of eastern Canada and that of the Rocky Mountains as well as those of Alaska and portions of Asia. He has also done notable work in establishing the intimate relation between the distribution of plants and the chemical nature of the underlying rock. The Herbarium has in press a flora of Margarita Island, off the coast of Venezuela, the result of highly interesting explorations made by Mr. J. R. Johnston, formerly an assistant in the Herbarium.

In order to take advantage of the exceptional facilities for botanical bibliography which are afforded by the library of the Gray Herbarium, the establishment has assumed the publication of an extensive card index of the genera, species, and varieties of American plants published in recent years. This work is carried on by the librarian, Miss Day, and is issued quarterly. Duplicate sets of the cards are purchased by the leading botanical establishments elsewhere in America and also at Paris, Vienna, St. Petersburg, etc., having become an important source of precise information on recent botanical publication. The undertaking is unusual in the fact that its expense has through careful management been considerably more than defrayed by the sale of duplicate cards.

The great need of the Herbarium is better housing. Its present quarters are congested to the point where the activities of the staff are seriously hampered and the collections in various ways endangered. For details reference may be made to the recent reports of the Curator incorporated in annual reports of the President. It cannot but seem to the Committee that the Herbarium, as one of the oldest and most carefully developed scientific collections in America, embodying the results of prolonged activity by many distinguished specialists, is eminently worthy of such accommodations as are safe, really appropriate to its nature, and of a kind to permit under the most favorable conditions its continued growth and usefulness.

Since its last report the Committee has suffered a deeply felt loss through the death of Mr. George Warren Hammond, for many years one of its members and a valued friend of the Herbarium.

AMORY A. LAWRENCE, *Chairman*,
EMILE F. WILLIAMS, *Secretary*.

April 14, 1909.

CCXXII

REPORT OF THE COMMITTEE TO VISIT THE MUSEUM OF COMPARATIVE ZOÖLOGY

To the Board of Overseers of Harvard College: —

The Committee wish to report that they visited the Museum on April 29th, and were received by Mr. Agassiz, the Director, and by Mr. Henshaw, the Curator, under whose auspices an inspection of the collections of the Museum was made.

A walk through the Museum cannot fail to impress the observer with the careful forethought for great simplicity and security of construction, and the thoroughly scientific arrangement and handling of the vast collections therein contained. The architectural arrangement of the various departments is of the simplest character, and one cannot but be impressed with the high degree of scientific accuracy displayed everywhere. The material on exhibition forms but a small part of the whole collection, — more than two-thirds of the specimens being stored for the purpose of scientific study. Among these are many great special collections, — for instance, those of the Brazilian Expedition of Professor Louis Agassiz, and those of the numerous dredging expeditions of Mr. Alexander Agassiz, which have been the subject of classic memoirs.

Among the recent acquisitions of the Museum, which have already been described in previous reports, is the large model of the Bora-Bora coral reefs, which has been carefully prepared under the direction of Mr. Agassiz, and is now cased in in the Museum. It serves in its own way to commemorate the extensive and fruitful investigations into coral reef formation which he has made during recent years.

There are at present more than 45,000 volumes in the Library, which, owing to its scientific value, has become one of Harvard's great possessions. It is eagerly sought out and consulted by students and masters in several departments of science, and not from Harvard alone, but from the whole United States and Canada. This great growth has made it necessary to place the books in stacks, and owing to this somewhat compact arrangement, the facilities for consulting the books are not so convenient as they would be if provision could be made for a more perfect system of artificial illumination.

With the growth of the Museum, the need of a number of expert assistants in the preparation and mounting of specimens has been felt.

The first need to which we call attention would not involve great increase in the expenditures, but the second is a large item. As the resources of the Museum and the Director's private generosity are already taxed to the utmost, it rests with the University itself, or with the public, rather than with the Museum, to bear this additional burden. Your Committee feel strongly that the University should assume it.

It is appropriate on this occasion to call attention to the fact that this year marks the semi-centennial of the establishment of the Museum of Comparative Zoölogy. On April 2, 1859, the Legislature of Massachusetts voted that the sum of $100,000 should be granted to the Museum of Comparative Zoölogy. In June, 1859, articles of agreement were made and executed between the Trustees of the Museum and the President and Fellows of Harvard College. A piece of land about five acres in extent was deeded by the Corporation to the Museum, for the purpose of erecting a fireproof building. The laying of the corner-stone took place with appropriate ceremonies on June 14, 1859. The formal establishment of the Museum took place in October of the same year, by the presentation of Professor Agassiz's collections to the Trustees.

The foundation was placed at first in the hands of a body of Trustees appointed by the State, and it was not until 1875 that the Museum was turned over and placed permanently in charge of the Corporation of the University.

A small and lonely looking brick block which was erected at this time, with its four rooms to the floor, has grown nearly continuously around three sides of the great square originally laid out for it. A second section of the Museum was soon added to the first, in 1871–72, and further additions were made in 1877, and again in 1880–82, and it was not until 1888–89 and 1901–02 that the last portions of the Museum were finally added. The Departments of Botany and Mineralogy and Geology which have been added from time to time, and the Peabody Museum of Archaeology and Ethnology — the building of which was begun in 1876 — form portions of the present structure now known as the University Museum, of which the Museum for Comparative Zoölogy forms the major part.

The University Museum contains thirty-two rooms in its ground plan, and is by far the largest building of the University. Nor is it an empty shell, — it barely serves to house its treasures and the students thereof.

A glance at the plans of this building shows what grand results have been accomplished in a half-century's work, and what has followed from the inspiration of a great teacher. Intellectually, the institution has grown from the daring experiment of a great enthusiast to an important position among the leaders of the world's museums and laboratories. It is doubtful if any department of the University has brought home to it from the old world more fame, or if any department has done more enduring work for time to come.

It is well to recall these historical memories on this occasion, and it must never be forgotten that such progress and development would have been impossible without the lifetime devotion of two very remarkable men, — father and son. One is gone; in his life and death he has had great praise. He deserved it, and the University should ever commemorate him. One is with us; we should not wait until he is gone to give praise to him. He is a major benefactor to the University, and a great figure in her history. To him the University owes not only a lavish fortune spent in her service, but much more than this, — the lifework of a great administrator, and a great scientific man.

Your Committee, therefore, are unanimously of the opinion that this fiftieth anniversary of the Museum of Comparative Zoölogy should be fittingly celebrated by the whole University, and, further, that no celebration could be so fitting as one which would evince the University's admiration of the scholar and the man, — Alexander Agassiz. It strongly recommends, therefore, to your Board timely and positive steps in this direction, and tenders its services if desired for more concrete suggestions or consultation.

J. COLLINS WARREN, *Chairman.*

May 12, 1909.

CCXXIII

REPORT OF THE COMMITTEE TO VISIT THE LIBRARY

To the Board of Overseers of Harvard College: —

After visiting the Library and conferences with the Librarian your Committee desire to call to the notice of the Overseers matters which, although set forth in former reports, are still prominent and important.

There are now as heretofore two problems of the Library requiring attention. First, lack of funds to care for the books; second, an insufficient Library building.

The Librarian needs at least Five Thousand Dollars a year more than he is at present allowed, or than he is at present able to obtain, in order to properly administer his departments. Books are received in great numbers both by gift and by purchase. Recent gifts include great collections, such as the Bowie library of 11,000 volumes, the Montt library of South American History, and Furtwängler's Archaeological library. Some of these books are still unpacked, and the manner in which these and others are handled results in incomplete and imperfect records which must some time be revised. The lack of means to employ people necessary to do the clerical work involved in the first care of books as these books come to the Library is a serious matter if we care for the Library at all. As this condition is prolonged, the evil increases rapidly, and the general efficiency of the Library becomes more and more impaired.

In a report of this Committee made in May, 1907, touching on this feature of Library conditions — as bad then as it is reported to be now — we remarked: —

"Accepting the present situation of the Library as it is presented to us, we deem it unworthy and bad judgment for the College to permit the Library work, for lack of a few thousand dollars, to fall short within the scope planned and expected of it."

Conditions to-day appearing unchanged, and emphasized by lapse of time, we repeat our former observation in the hope that a stronger impression may be made and more results follow. As a practical solution of this particular and unfortunate difficulty, we recommend one of two things, — either stop the purchase of books

altogether, until a way is found to handle and care for those that are bought in a suitable manner, or reserve out of the funds usually appropriated for the purchase of books a portion of the total amount and appropriate this portion to administration expenses of the Library.

It is submitted that money given for books carries with it or should carry with it the obligation to provide for the care of such books, and if funds for proper care are not available otherwise, a charge should be placed upon the income of the funds which are held for purchase of books. We would suggest, for example, that out of every thousand dollars of income available for new books Two Hundred Dollars should be retained and applied to the expense of caring for books. If there are overruling objections to this action, then let purchases stop for a while until a better condition prevails. In either event we shall then have a more effective working Library, and some of the constant woes that seem to beset your Library department will be tranquilized. It is better, in our opinion, that the Library should hold fewer books than that the number should be increased and neglected.

The other problem to which we refer is much larger than this of administration expenditures and concerns the general future of the Library, being the question of determining the character of a future Library building. There are several views taken of this question. This Committee do not so much approve or disapprove of any particular view out of the several that have been presented as it does advocate that some very definite plan or scheme shall be adopted without delay. We deem it wise that at this time some general principles should be discussed and accepted finally as a guide to future action.

It is perhaps unnecessary to repeat that the present Library building, besides being insufficient for its purposes, is also in no way worthy of the University.

Under the ruling of the Corporation as to the preservation of endowed buildings Gore Hall should not be torn down to make room for a new Library, even if a benefactor stood ready to donate such a building. Therefore, if Gore Hall is to remain the Library, it must remain such with changes and additions to the original structure of such extent and character as shall produce when made a single complete building; a new building, in fact, built out of and around an old building. Following a recommendation of this Committee, a substantial addition was built on to the Library two or three years ago, blending with the style and architecture of the main building

and having in mind that this addition might become an acceptable part of any new Library constructed with a view of preserving and absorbing the present structure. That addition was, in our opinion, wise. By reason of it, the work, the facilities, and the usefulness of the Library have been advanced. The investment required for the addition thus referred to, although large, should not, we believe, influence the determination for the future. It may be that other similar additions will be constructed of necessity before we achieve the final and perfected Library, and it may also be that the final Library will be made up of just such additions made from time to time towards a general plan. A general plan based on such lines has, we are informed, been drawn by an officer of the College and submitted to the Corporation for approval. Without prejudice to such a plan or any other, we earnestly recommend that this plan be not accepted and that no plan of any alteration or new building be accepted before other plans of similar or different character and conception be considered and submitted to impartial experts. We ask for the best expert opinion upon this important question.

To some it seems that an entire new building will offer the only sound solution for the future, leaving Gore Hall out of consideration as a Library and devoting that ancient edifice to other uses.

Another suggestion is that the Library buildings shall ultimately consist of Gore Hall as at present and one or more new neighboring buildings separate and apart from Gore Hall, with underground communication and mechanical service to the main building. These new buildings may be as many as desired and of suitable and characteristic style of architecture.

Then there is the third plan first spoken of above of a new building made out of the old.

These three suggestions involve radical differences of ideas. We earnestly recommend that no final action concerning a future Library building of whatever sort be taken except after all the questions involved have been submitted to architects or library experts of repute and their report had thereon.

There will be a widespread satisfaction and content when this question is settled once for all. It should not be settled until it is settled right and we believe this can be done when done only under advice of persons versed in the construction and purposes of library buildings and the relation which a Library should bear to a University.

Your Committee do not offer any opinion upon any particular plan or theory of plans. We urge that some plan or some theory

be accepted at the earliest date possible and before we may become committed to courses which later might be regretted.

Architects and library experts — such a class of men as we have in mind in this report — will, we believe, be glad to give advice and attention upon such matters as may be submitted to them free of charge in connection with questions of such general public importance. Even under such circumstances, however, the disbursements and necessary outlays should be repaid.

Anticipating that the College Treasury may hold no funds for such purposes, this Committee respectfully offer the sum of Two Thousand Dollars, subject to the call of the Treasurer of the College, to be used to meet disbursements incurred in carrying out the foregoing recommendations.

For the Committee,

FRANCIS R. APPLETON, *Chairman.*

May 12, 1909.

CCXXIV

REPORT OF SPECIAL COMMITTEE ON THE DEGREE OF "DOCTOR OF LAW" (J.D.)

To the Board of Overseers of Harvard College: —

The undersigned, to whom was referred the vote of the President and Fellows of April 19, 1909, adding to the degrees set forth in the ninth statute of the University that of "Doctor of Law" (as therein stated), submit the following report: —

The plan of giving a Doctor's degree to law students who are college graduates seems to have originated with the Faculty of the Harvard Law School in 1902. The first law school to adopt the degree was the law school of Chicago University. That school adopted it at its organization in 1902. Professor Beale, of our School, was at that time acting as its Dean. Since then four more law schools have adopted it, namely, the law school of New York University, of Leland Stanford, of University of Michigan, and University of California. The degree conferred by these universities is J.D. (Juris Doctor) and the Committee understands that that is the degree contemplated by the vote of the President and Fellows.

From 1902 on the Faculty of our Law School have been in favor of conferring a Doctor's degree upon college graduates. They are and have been very earnest in the matter, and, with a single exception, are unanimous on the point.

Petitions for the adoption of the Doctor's degree were received from the students of our Law School in 1902, 1904, 1905, and 1908. The students also are very earnest in the matter.

The Faculty took up the subject with the Committee to visit the Law School at the annual conference between the two in 1903. The change did not commend itself to the Committee and they so stated in their report to this Board dated April 8, 1903.

The question was again brought up by the Faculty at the annual conference held on April 7 of this year, and at a later meeting of a majority of them this Committee were inclined to yield a reluctant assent to the change, out of deference to the earnestness of the Faculty and because the matter was not of vital consequence.

But after mature consideration your Committee are not able to take that view of the matter.

The Faculty urge that the degree given by a graduate school to the holder of an A.B. degree ought to be a Doctor's degree as matter of academic symmetry, and they point to the degrees of Doctor of Philosophy and Docter of Medicine as examples.

But the degree given to a Doctor of Philosophy is a second or third degree given for scholarship akin to that for which the A.B. is given as the first degree, while the degree given by the Law School is the first degree given for proficiency in a new profession. We suppose this to have been the reason for giving Bachelor degrees to the graduates of the Law School and of the Divinity School.

It is true that a Bachelor degree is not given to the graduates of the Medical School; but in the opinion of the Committee the medical degree should have been a Bachelor's degree and not a Doctor's degree. Custom has settled that otherwise and no one would now think of undertaking, out of regard for academic symmetry, to give a Bachelor's degree to one who is known throughout the community as a doctor.

The same respect for custom and the habits of the community might well be enough to prevent giving to graduates of the Law School the degree of Doctor of Law or to graduates of the Divinity School the degree of Doctor of Divinity. Each of these degrees has come to mean to the community at large the highest honors in the gift of the College, not merely in preparation but for accomplishment, and it would be unfortunate to cheapen them by making the ordinary degree given to every graduate of these two schools a Doctor's degree differing from them in name in a slight degree. In the opinion of your Committee, the two schools stand on the same basis in this respect.

The stage of proficiency reached by the graduate of a law school is properly described by making him a Bachelor of Laws, a degree understood and appreciated by the community. The mere graduate of a law school is not a Doctor of Law in fact, and it is a mistake to call him so.

For these reasons your Committee recommend that this Board do not concur in the vote of the President and Fellows of April 19, 1909.

WILLIAM CALEB LORING,
JAMES T. MITCHELL,
WILLIAM RAND, Jr.

June 23, 1909.

CCXXV

REPORT OF THE COMMITTEE ON MATHEMATICS

To the Board of Overseers of Harvard College: —

There is a very general impression that the study of mathematics is especially difficult; that only a select few can make any success in it; and that the utmost the ordinary man can expect is to pass the college entrance examinations in elementary algebra and plane geometry, and then bid good-bye to the subject forever. Undoubtedly the highest branches of any study are always hard, and it is no easier to reach the summit in mathematics than in any science or art, but elementary mathematics should be easy to the average boy if approached under the proper guidance and without fear.

Your Committee believe that this uncalled-for dread is engendered in the boys long before they reach college. We think that teachers and scholars in the preparatory schools are painfully apt to approach algebra and geometry and the simpler mathematics with fear and trembling, in the belief that they are very difficult studies, and that as they are looking for trouble they naturally find it. We also believe that too frequently the teachers have not sufficient grasp of their subject to depart from the literal text of the books, and that even when they have sufficient knowledge they lack the ingenuity and above all the patience to awaken the interest of the boys. We note with pleasure that the Department is now giving as an experiment a special course for teachers of elementary mathematics, intended to supply that full understanding of the underlying and general principles which is invaluable in teaching beginners. This course is, however, unfortunately, as yet but little patronized. The training of teachers for the preparatory schools is undoubtedly one of the most important functions of the college, for if boys are well taught at school they will no longer come to college filled with terror of anything mathematical, but will come with an interest in the subject and most of them with a feeling that it is easy, and that it would be wise to go further with it. We are very glad that the Department is trying to deal with this problem, and we hope it will be followed up until the college is able to turn out a supply of properly equipped and inspiring school teachers.

Your Committee believe that the average man, who wishes to get at college a general education, would do well to pursue his mathematics through the elements of the calculus, and feel that the number now doing this is not as large as could be wished, although, perhaps, as great as can be properly taught by the present staff. One thing which keeps down the numbers has already been mentioned. The boys have been so taught in the schools that they are afraid of mathematics. Another potent force is to be found in the encouragement which has been given to the best men to take from five and a half to six courses a year. Examinations are more certain to detect and unmask superficiality in mathematics than in almost anything else. The quickness and ingenuity which enable a bright boy to pass a fairly good examination in almost any other subject after a few days' study of note-books and text-books do not result so well in mathematics, where nothing seems to take the place of regular weekly work. The result is that men seeking to get a degree in three years do not take courses in mathematics unless they have very marked aptitude for them, and this tends greatly to reduce the number of bright boys electing these courses. It may be added in passing that those men who are specially talented in mathematics suffer seriously if they try for honors in that branch while taking six courses a year, for although they can get through and get high marks they do not get the mastery of their subjects which such men used to get, and would still get if they were only taking four and a half courses a year.

The professors of mathematics fully appreciate its importance as part of a general education, and they have recently started a new half-course on general mathematical questions intended to open the eyes of the men who do not expect to go very far to some of the ramifications of the science. This course is quite popular, and it is much better that men should take this than that they should take nothing, but we do not feel that it ought to take the place, as part of a general education, of the regular courses in analytical geometry and elementary calculus.

Your Committee hope that in spite of the difficulties above referred to even more may be done by the Department itself to make these courses more interesting and instructive, and, therefore, more attractive to students. As at present conducted, the professor in his lectures takes the men step by step through the subject, so that a person attending all the lectures would not require a text-book. The whole time of the professor is engaged in this exposition and in the explanation of such problems as he is asked by members of the class

to explain. Problems are given out at one lecture to be handed in done at the next. A great part of the energy and attention of the student is devoted to taking notes, and if he loses a step he is likely not to understand the rest of that lecture, and if, in copying from the blackboard, he omits a step, he is very likely to be unable to understand his notes. A careful student goes over his notes two or three times a week and makes sure that they are complete and correct, and this takes up a considerable amount of his time. If he misses a lecture, or in any way falls behindhand, he is likely to be unable to understand what follows, until, by the assistance of a coach or a classmate, he catches up. All these things are very discouraging to the average man, and greatly delay the progress of the class.

Your Committee believe that in several courses this method might be modified to advantage. We think that much of the work now done on the blackboard by the professor should be embodied in printed or typewritten notes distributed to the class, or, if this is not convenient, a text-book should be adopted and so closely followed in examinations and problems that a student will be independent of his lecture notes. Freed in this way from the necessity of teaching the subject step by step, the professor could devote himself wholly to interesting the students in their work by making them as far as possible see to what it is tending, and for what it is useful, and by showing its relation to other branches, to physics and to mechanics.

Nor ought the time of a whole section to be taken up in watching the professor do one of the problems on the board merely because some student is unable to do it without assistance. There should be individual conferences of ten or fifteen minutes' duration in which the boys should be helped separately over their difficulties. A very short conversation with a boy alone will often discover what his troubles are and enable the teacher to remove them more effectually than hours of lectures to a class. In this conference work the professor should have the help of such assistants from the senior class or graduate schools as may be needed, the number depending on the size of the section. The problems given out to the class could also be corrected by these same assistants, and at the conferences the best ways of doing the problems could be discussed and the modes of attacking new problems explained. The problems could be selected, as they now are, to show the interesting and varied applications of the methods which the pupils are mastering, and also in such a way as to force them to keep up with their study of the printed notes or

text-book, and to seek needed assistance at the conferences. In the case of boys who are able to do their problems successfully without assistance and to pass good examinations, attendance at the conferences should be voluntary. The work on the problems should in all cases count in the marks for the year. This conference work would occupy about one-third of the professor's time; the other two-thirds would be given to lectures, whose object as above indicated should be illustration, emphasis and inspiration.

An advantage in this plan, which the Committee regard as important is the capacity for learning from text-books which would be incidentally gained. In mathematics, as in everything else, one of the most important things to acquire is the ability to study a subject; a knowledge of what text-books to look in and of the way to use them. Under the present method the students are, it is true, advised to consult text-books, but they are not forced to do so and may depend wholly on the lecture notes taken by themselves or their friends.

In short, the principal improvements which the Committee recommend are: (1) the purchase by the student, either at the beginning of the course or lecture by lecture, of printed notes or a text-book covering all the ground necessary to be covered in the course; (2) the substitution of one or more conference hours for an equal number of hours now given to lectures.

The modification in the lectures which the Committee hope to see would naturally follow from the other changes, because it would be unnecessary for the lecturer to cover the whole ground of the course in his lectures, or spend any time in the explanation of problems. Freed from these necessities a set of carefully prepared lectures would deal with and illustrate the more important points and the general character of the subject. We hope the students would gain by them as a man who is struggling through a field of corn higher than his head gains by being lifted above the corn stalks and given a view of what is beyond.

W. L. PUTNAM,
PHILIP STOCKTON.

JUNE 23, 1909.

CCXXVI

REPORT OF THE COMMITTEE TO VISIT THE BOTANIC GARDEN AND BOTANICAL MUSEUM

To the Board of Overseers of Harvard College: —

Individual members of your Committee have visited the Botanic Garden and Botanical Museum, at different times during the year, and have reported both of these to be in a satisfactory condition. It is pleasant to state that the Botanical Museum has been placed upon a secure pecuniary foundation.

The annual meeting of the Committee was held in the Director's room at the Botanic Garden, on Wednesday, May 12th. The annual report was read and accepted. From the report it appears that there remains a small debt, contracted for buildings a few years ago, with the approval of your Committee, now amounting to $6,619.49. It was decided to attempt the immediate payment of this obligation, which now stands on the books of the Treasurer as "Advances to the Botanical Department."

The Director, Professor Goodale, announced his resignation, after thirty years of service, and introduced to the Committee the new Director, Mr. Oakes Ames, who has been the Assistant Director for about eight years. Your Committee regret the loss of Professor Goodale's services, but they are glad to report that he has been appointed Honorary Curator of the Botanical Museum, in which capacity he can continue to aid the Botanical Establishment. The Committee are glad to receive Professor Goodale's assurances that Mr. Ames will conduct the affairs of the Garden with energy and good judgment.

An inspection of the Garden showed your Committee that the Head Gardener, Mr. Robert Cameron, is conducting the work of superintending the workmen with great skill, prudence, and success. Every part of the Garden is in excellent condition.

Your Committee would like to call particular attention to that part of Professor Goodale's annual report which deals with the Harvard Botanical Station in Cuba. This station for experiments has been carried on for many years with gratifying results. Mr. Edwin F. Atkins, a member of your Committee, has borne all of the expense connected with the station, which has been managed

under the superintendence of the Director and Assistant Director of the Harvard Garden, with the valuable personal supervision of Mr. Robert M. Grey. Mr. Atkins reported that by Mr. Grey's experiments some of the new varieties of sugar-cane, raised from seed produced artificially, contained nearly 18% of sugar, a larger amount than had hitherto been reached. Mr. Atkins stated that the work was wholly encouraging in every way, and that numerous valuable sorts of tropical fruits and vegetables are now being improved rapidly.

Finally your Committee desire to express great satisfaction with the recent action of the Corporation in deciding against any attempt to relinquish the Botanic Garden of the University. The Garden is doing good work for students in the College, the professional schools and the public schools, as well as affording pleasure and instruction to hosts of amateurs and casual visitors. The Garden is believed by your Committee to be a valuable asset of the University.

STEPHEN M. WELD, *Chairman*,
EDWIN F. ATKINS,
WALTER HUNNEWELL,
ARTHUR F. ESTABROOK.

June 30, 1909.

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